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ABSTRACT

The quantitative relationship between factors previously identified as affecting the extent and intensity of training within organizations was explored through a survey of companies in Australia's entertainment and process manufacturing sectors. A self-completion questionnaire was mailed first to a sample of 446 companies across Australia (112 of which completed it) and then to an additional 299 companies. The survey responses were subjected to a log linear analysis. The analysis confirmed the important role of workplace change as a trigger or "driver" of training in both sectors. The effect of organizational change measured through changes to job roles and organizational situations was strongly related to all seven training activity variables studied. No relationship between worksite size and training volume was identified. A commitment to quality did not appear significantly associated with training activity, except with respect to formalization of training. Workforce permanence was significantly and positively related to the following indices of training activity: training diversity; reliance on external training; formalization of training; learning support; and individualization. Competition had only an indirect effect on training. The following items are appended: descriptions of the survey methodology, dependent variables, and independent variables; details of the log linear analysis; and the survey instrument. (Contains 45 tables and 96 references.) (MN)

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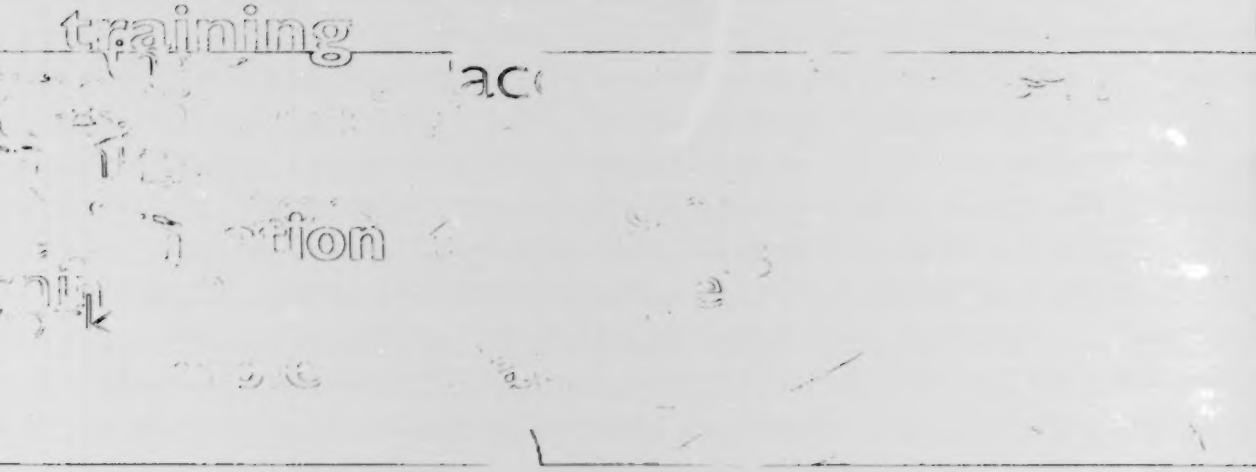

Factors influencing the implementation of training and learning in the workplace

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Contents

Acknowledgements 5

Executive summary 6

1 Introduction 10
- Background 10
- This project 10
- Report structure 11

2 Literature review 12
- Context 12
- Factors influencing training 13
- Worker and job characteristics 14
- Enterprise factors 17
- Environmental factors 22
- Models for describing training activity 25
- Conclusion 28

3 Profile of industries in the study 29
- Industries included in the study 29
- Characteristics of selected industries 29
- Process manufacturing industries 31
- Cultural industries 33

4 Methodology 35
- Overview 35
- Questionnaire design 35
- Survey administration 36
- Data analysis 37

5 Findings 39
- Introduction 39
- Enterprise characteristics 39
- Character and extent of training 46
- Respondents' views on what influences their training decisions 52
- Findings of the log linear analysis 53
- Correlation between variables 56
- Summary 57

6 Discussion and implications 59
Methodology issues 59
Workplace change 60
Size of the worksite 61
Industry sector 63
Quality 64
Workforce permanency 66
Competition 66
Workforce professionalisation 67
Strategic approach 67
Training indices 68
The model of enterprise training 69
Conclusion 70

References 72

Appendices
1 Survey administration 76
2 Description of dependent variables 78
3 Description of independent variables 80
4 Details of log linear analysis 82
5 Survey instrument 86

6

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Executive summary

Project brief

The aim of this research was to explore the quantitative relationship between factors identified previously in the literature as influencing the extent and intensity of training within organisations across two different industry sectors—entertainment and process manufacturing.

The project sought answers to the following questions:

- What is the actual volume and diversity of training activities in the process manufacturing and entertainment industries?
- What are the key factors influencing the take-up of training in these industries? Are they different from factors found to be most important in other areas?
- What are the key barriers to training involvement in these industries (that is, those factors inversely related to training activity)?
- What can be learnt to add to the capacity to predict training involvement by specific enterprises?
- What use can be made of the existing training demand models to modify the influence of specific 'drivers' and 'mediators' of training?

Methodology

Study participants

The two industry sectors chosen for this study encompass chemical and oil, plastics, rubber and cablemaking, manufactured mineral products (process manufacturing), entertainment, libraries/museums, and film and television (entertainment-related) industry sub-sectors. The vocational education and training (VET) interests of the two broad industry categories are represented by the Manufacturing Learning Australia (MLA) and Cultural Research and Training Enterprise Australia (CREATE) industry training advisory boards. Both industry sectors are recognised for generally low levels of participation of their enterprises in (formal) training (with the exception of some sub-sectors such as libraries).

Data collection

The data were collected through a self-completion mailed questionnaire. The survey instrument used was derived from the survey instrument used by Hayton et al. (1996), with modifications to incorporate questions which would explore aspects of competition, exposure to global markets and industry regulation. Further modifications were carried out to change the survey format from that of a telephone interview to one of self-completion.

The survey was sent to 446 organisations within the industry groups being studied. Non-respondents to the survey were re-surveyed and those that still did not respond were followed up by telephone. The overall response rate for the study was 44%.

Data analysis

The main method used to analyse this data was log linear modelling. This is a statistical procedure which applies a model to the data in the same general way as a simple or multiple linear regression. In each model there is one dependent variable and one or more independent variables. The model tests the strength of the relationships between the variables and states which of the independent variables has a significant explanatory effect.

A set of indices of training activity (dependent variables) was calculated from various questions in the survey. These indices were:

- diversity of training
- volume of training
- training reform engagement
- reliance on external training
- formalisation of training
- individualisation
- learning

After examination of the relevant literature, a set of factors thought to be associated with training activity (independent variables) was identified from various questions in the survey. These factors were:

- industry sector
- size of enterprise
- Australian ownership
- proportion of workforce in full-time employment
- proportion of workforce in managerial positions
- change in circumstances of the enterprise
- change in technology on products
- level of competition
- industrial relations coverage
- commitment to quality
- business strategies
- culture of the enterprise

Findings

Change

The role of workplace change as a trigger or 'driver' of training activity was confirmed as very important in the two industries included in this study. Workplace change was explored in this study from two main perspectives—change as a result of *technological innovation*, and *organisational change*.

The effect of *organisational change* measured through changes to job roles and organisational situations was strongly related to all seven training activity variables.

The effect of new product or services development, *technological innovation*, was strong on four of the seven indices of training activity, including training volume.

Size

The current study showed an absence of any relationship between size of worksite and training volume. This finding is in contrast to that of a good proportion of the literature which contains many articles offering the opinion that size does count, and that larger enterprises invariably train more and at a higher standard.

The results of this study suggest enterprise or worksite size in the studied industries is an influencing factor on the *nature* of training (training reform engagement, reliance on external providers, and training formalisation) but not on the *volume* of training.

Quality

A commitment to quality processes was not shown to be significantly associated with training activity except for one index, formalisation of training. The influence of quality is possibly interwoven with broader influences of change within enterprises.

Permanency of the workforce

In this current study, workforce permanence was significantly and positively related to five indices of training activity—training diversity, external reliance, formalisation, learning support and individualisation. These are all variables which describe the *nature* of training.

It is of interest that no relationship was observed between workforce permanency and the volume or extent of training activity. This suggests that training investment in a more permanent and stable workforce does not result in more training, but rather more formal outcomes (for instance in the form of qualifications).

Competition

At best, competition appears to have an indirect effect on training, which is ambiguous in its direction depending on the idiosyncratic circumstances of an enterprise at a particular time. At worst, competition has little effect on the decisions managers make about training activity.

Strategic approach

In the current study no relationship was found between the existence of training in the business plan and training activity. This was the case even though the existence of business plans was found to be widespread (81% of enterprises) and most (71%) mentioned training.

Conclusion

The study results emphasise the diversity of circumstances in which training activity occurs in enterprises and the importance of taking due cognisance of those differences in order to maximise the volume of training activity and tailor its nature most economically and effectively to enterprise requirements.

It is important to acknowledge that many enterprises, especially smaller and medium-sized enterprises, undertake a considerable amount of 'unrecognised' training. Thus, support to enterprises may be more valuable if it shifts from an emphasis on volume (extolling the virtues of more training) to an emphasis on the nature (effectiveness and efficiency) of training activity. This is particularly pertinent to small businesses.

The study results suggest several ways of discriminating amongst enterprises and locating them within the 'market' for training services. In the context of the Australian National Training

Authority (ANTA) taxonomy for segmenting the market ('not interested', 'here and now' and 'high achievers'), if it is desirable for training volume to be increased, then marketing might be best directed at those 'not interested' and 'here and now' enterprises embarking on significant *change*. Alternatively, if the nature of training conducted in enterprises was thought to be requiring change (more formal, stronger links to VET institutions), then the appropriate market to target would be smaller and medium-sized 'here and now' enterprises possibly looking to formalise their organisational structure.

1 Introduction

Background

The uptake of training at an enterprise level has been the focus of some important research efforts in recent years (Smith 1997; Moran 1998; Gibb 1999). The majority of this research has been qualitative in nature, and has attempted to identify, through cases studies and interviews, the factors considered by an enterprise when making training decisions.

An exception to the mostly qualitative research endeavour in this area has been the series of investigations conducted over a number of years by a consortium of VET research interests. The culmination of their efforts has been reported by Hayton et al. (1996). In this major research undertaking, not only were the factors that might influence the uptake of training identified, but they were systematically organised into a model to explain when and how the various factors might be influential. This research effort is discussed in several chapters, but perhaps most comprehensively in the literature review in chapter 2. The current study attempts to build onto the work undertaken by Charles Sturt University (CSU) and the University of Technology, Sydney (UTS).

This project

This research project aims to explore the quantitative relationship between factors that have been identified previously in the literature as influencing the extent and intensity of training. The methodology, with some notable exceptions, borrows (by design and intent) heavily from the earlier study noted above (reported in Hayton et al. 1996).

This current project explores these relationships in two specific Australian industries not covered in the previous work—the process manufacturing and entertainment industries.

The project seeks to build on the early research work by finding answers to the following questions:

- What is the actual volume and diversity of training activities in the process manufacturing and entertainment industries?
- What are the key factors influencing the take-up of training in these industries? Are they different from factors found to be most important in other areas?[1]
- What are the key barriers to training involvement in these industries (that is, those factors inversely related to training activity)?
- What can be learnt to add to the capacity to predict training involvement by specific enterprises?
- What use can be made of the existing training demand models to modify the influence of specific 'drivers' and 'mediators' of training?

1 Hayton et al. (1996) found only a small number of factors to be strongly influential on training activity, including enterprise size, workplace change initiatives, business planning and the industry itself.

After the commencement of the study, further research 'questions' were added to the above at the request of the National Centre for Vocational Education Research (NCVER). The additional areas of research interest focussed on the nature of learning cultures, the relationship between different cultures, and the amount and type of training and learning.

Report structure

The report is structured as follows:

- Chapter 1 Introduction
- Chapter 2 Literature review—a comprehensive review of the literature, attempting to identify factors which may influence the type and level of training performed in an enterprise
- Chapter 3 Profile of industries in the study
- Chapter 4 Methodology—an overview of the methodology, including response rates and an explanation of the process of analysis
- Chapter 5 Findings—the findings from the study including those from the log linear analysis
- Chapter 6 Discussion and implications—interpretation of the findings, in conjunction with the literature review, with an effort to try to expand and improve on the Hayton et al. model

2 Literature review

Context

There is considerable training undertaken each year in Australian enterprises (Long et al. 1999), both in conjunction with, and independent of, the formal vocational education and training (VET) system. This has been underpinned, some argue, by an increasing awareness over recent years of the importance of intellectual capital for an enterprise's competitive strength and its future prospects (Brooking 1996; Sveiby 1997). This awareness in turn has been prompted by the rise of knowledge work, an increasing intensification and complexity of working, and an increasing requirement for reliability in the work undertaken. Owen (1999) argues that there is now a common emerging set of workplace characteristics and that they have an important impact on work practices and thus on workplace learning, including training (see also Black 1998; Hager 1997).

Actually measuring enterprise-level training/learning activity can be difficult. Estimates that rely on counting government-funded enrolments or other formal training activities have a number of limitations, and are likely only to reveal the tip of the iceberg in relation to total (enterprise-level) training effort. Frazis, Gittleman, Harrigan and Joyce (1998) for instance, estimated that for every hour of formal training there were at least two hours of informal training. Bishop (1991) found that formal training was only 8% of the total hours of training for new employees in the first three months after they joined the firm. A survey of New Zealand employers found that, for a substantial majority of respondents, informal training and the improvement of skills on an everyday basis, were considerably more important for improving skill levels within the organisation than formal training (Decision Research Limited 1997).

A more accurate measure of training activity is provided by the Australian Bureau of Statistics (ABS) surveys of education and training experience undertaken in 1989, 1993 and 1997 (ABS 1990, 1994, 1998). In the twelve-month period prior to each survey, 79%, 86% and 80% of wage and salary earners, respectively, undertook *some form* of training. For each year, on-the-job training was by far the most commonly reported form of training (72%, 82% and 72% respectively in each year, compared with 35%, 31% and 33% for in-house training courses and 10%, 12% and 20% for external training courses, respectively). Multi-response categories were allowed; therefore, some components totalled more than 100%. ABS defined on-the-job training as being when an individual participates in a workplace training activity designed to improve their job skills, while working in a job. Workplace training activities can include asking questions of co-workers or colleagues, teaching yourself, being shown how to do your job, watching others work and other activities. However, on-the-job training excludes any training that occurred as part of an in-house or external training course, or study for an educational qualification.

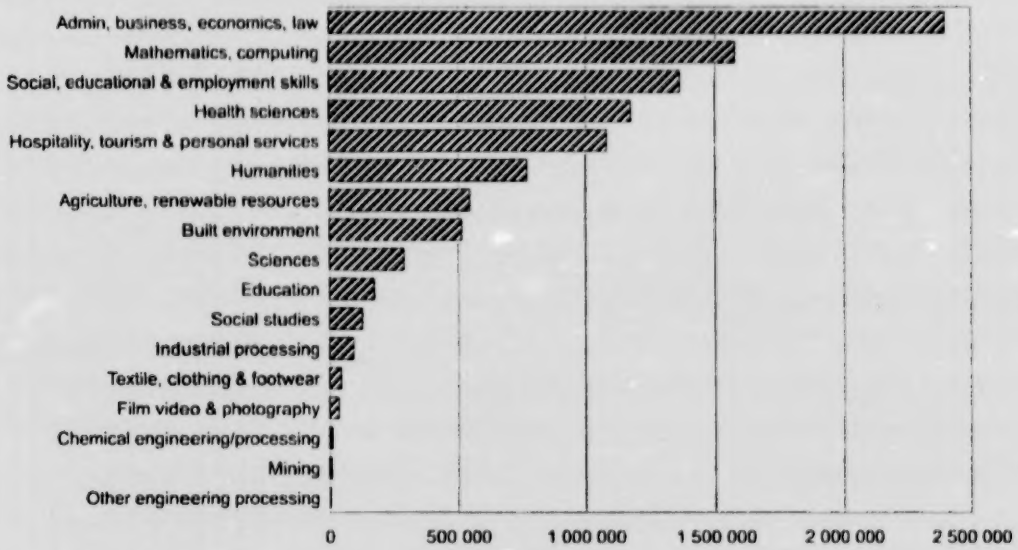
However measured, the extent and quality of enterprise-level training varies considerably between enterprises, both across and within industry sectors. The studies by Hayton et al. (1996) found that firms characteristically differ in:

- their reliance upon external training
- their reliance upon accredited and regulated training qualifications
- their engagement with public competency standards and training regulation arrangements

- the range and variety of training methods that they adopt
- the extent to which they formalise their internal training processes

The magnitude of differences between enterprises is well-illustrated in figure 1, which looks at one factor that could influence enterprise training activity (industry sector) for one vector of training activity (vocational module enrolments).

Figure 1: Vocational module enrolments by discipline group for Australia 1999



Source: NCVER unpublished statistics

Statistics derived from the ABS surveys emphasise that the incidence of on-the-job training is also not distributed equally among all workers (ABS 1998, table 1.4, p.19). Incidence of on-the-job training in 1997 varied with different employment characteristics, as follows:

- occupation (from 90% for professionals to 55% for labourers and related workers)
- sector of employer (81% for public employers compared with 69% for all private employers)
- size of business (from 65% for businesses with less than ten employees to 76% for businesses with over a hundred)
- employment status (full-time 76% compared with 63% for part-time; 76% for permanent employees compared with 61% for casual employees)

Variation was also pronounced in demographic characteristics, as follows:

- age (ranging from 85% for 20–24-year-olds to 55% for 55–64-year-olds)
- State or Territory of usual residence (ranging from 69% in Victoria to 82% in the ACT)
- birthplace (ranging from 73% for those born in Australia to 62% for those born outside Australia, in countries which were not mainly English-speaking)
- level of educational attainment (ranging from 79% for those with post-school qualifications to 64% for those without post-school qualifications)

Factors influencing training

What factors influence the amount and type of learning that occurs in enterprises? Some of the more commonly considered factors that might influence the extent of training were noted in the

introductory section above. Many other factors have been proposed in the literature that might potentially influence training effort, most of which are discussed in later sections of this chapter.

Prior to an individual discussion of the many factors canvassed in the literature, a division of factors into manageable categories helpful to the analysis will be applied. Several authors (Sparrow & Pettigrew 1985; Hendry & Pettigrew 1989; Hayton et al. 1996) have attempted to develop a taxonomy for sensibly classifying factors influencing training.

One such taxonomy was the result of a literature review conducted by Long et al. (1999). They examined differences in the incidence and volume of enterprise-based education and training between categories of various characteristics of workers and enterprises. Based upon the literature reviewed, they considered the following major categories of influence could be isolated:

- *worker characteristics* (age, sex, ethnicity, education, ability, motivation and tenure) and *job characteristics* (occupation, hours worked, casual employment, and earnings)
- *enterprise characteristics* (firm size, the self-employed and employers, industry, sector, human resource policies and technological change)
- *sociopolitical and economic environment* (unemployment, competition, legislation and national characteristics)

This taxonomy has been adopted to organise the findings and presentation of the literature in the remainder of this chapter. It is not the only, or even necessarily the best taxonomy which could have been adopted. However, it serves the purpose of providing a comparatively simple structure for presenting and understanding the findings of the literature review.

Worker and job characteristics

Personal characteristics

It has long been recognised that participation in formal education and training, including in VET, differs widely and systematically among those from different socioeconomic groups, for example, by gender, age, rural–urban background, income and ethnicity (see Lamb, Long & Malley 1998; OECD 1998). However in recent surveys, the ABS found, contrary to the above, that the incidence of on-the-job training was very similar at least for males (71.6%) and females (71.7%) and also by area of usual residence (73% for capital cities compared with 70% for other areas). See also the earlier ABS surveys of training (ABS 1990, 1994; Schwartz et al. 1997).

Long et al. (1999), in their literature review, summarise the results of three recent reviews of the relationship between the background and the employment characteristics of workers and the incidence and extent of training, as shown in table 1. Blundell, Dearden and Meghir (1996) summarised seven studies that provide information on the distribution of enterprise-based training in Britain. Groot (1997) examined the incidence of training that had been reported in 26 studies from Britain, the United States of America and several European countries. The Organisation for Economic Co-operation and Development (OECD) (1999) reported results from multivariate analyses of the incidence of formal training in seven OECD countries: there was substantial variation among the countries.

An interesting aspect of table 1 is the positive relationship found by two studies between union membership and training opportunity. Several other studies have shown that enterprises in which a high proportion of a worksite's employees were covered by awards or enterprise agreements tended to place a heavier reliance upon external accredited training (Marshman and Associates 1996).

Table 1: Summary of employee (personal) characteristics on the distribution of training

If the worker is ...	then the incidence/intensity of training is ...		
	Blundell et al. (1996)	Groot (1997)	OECD (1999)
Male	Higher	Higher	Variable
Younger	Higher	Higher	Higher*
A member of a minority group	Lower	Lower	
Better educated	Higher	Higher	Higher
A union member	Higher	Higher	
Recently employed	Higher	Higher	

Note: *Surveys restricted to workers aged 25 to 54 years.
Source: Long et al. (1999, table 5)

Of course, differences in access to training are not value-neutral. Groot (1997) notes that if some workers are offered more opportunities to participate in training than others, then as investments in human capital create inequalities between workers, they also tend to increase social inequalities, such as those resulting from wage inequalities and unequal employment opportunities.

Prior education

Many authors have found that better-educated workers paradoxically receive more training opportunities (Blundell, Dearden & Meghir 1996; Groot 1997). Blandy et al. (1999) found that, in Australia, prior education and training increases the likelihood that an employee will receive further training opportunities, but reduces the number of extra hours that an employee actually spends on further training. They also found that:

> *Australian firms are at least somewhat effective in their selection processes in matching trainable people to jobs requiring training.* (Blandy et al. 1999, p.4)

Blandy's findings were consistent with Bishop's which revealed:

> *... a significant tendency of new hires with relevant previous work experience, relevant employer-sponsored formal training, and relevant vocational education (particularly when obtained from a private voc/tech institution) to require less training, to be more productive, and to be paid higher wages both initially and after one year.* (Bishop 1994, p.193)

Blundell, Dearden and Meghir (1996) examined the determinants and effects of work-related training among employees in Britain, considering individuals employed in 1991 in their sample (aged 33) who undertook some form of work-related training between 1981 and 1991. They focussed on employer-provided training courses and work-related training leading to a formal vocational qualification, whether employer-provided or non-employer provided. They found that:

- more highly educated people have a greater probability of receiving both types of training
- men had a substantially higher probability than women of receiving both types of training. For women, the results suggested a somewhat smaller impact on wages from employer-provided training than for men, but a relatively larger impact from courses leading to qualifications
- while employer-provided training added some 5% to the real earnings of individual workers over the ten-year period, those who obtained a middle or higher vocational qualification from their work-related training received even higher returns (5 to 10%). The highest returns to training were found to accrue to those with only intermediate levels of education

Mobility of workforce

Studies have been conducted which considered the mobility of the workforce, at a national level, as an important training influencing factor. For example, Groot (1997) noted that the rate of mobility of the factors of production, such as labour mobility and technological change, was an important determinant of the returns to training:

> *High labour mobility may result in low returns and low investments in on-the-job training. Labour mobility in the United States in general is much higher than in Europe ... Thus the wage effects of training in European countries appear to be higher than in the United States* (Groot 1997, p.13)

Hashimoto's (1994) comparison of training in automobile plants in Japan and the United States of America shows that the high propensity of American workers to move and United States management's failure to build trust-based employment relations has made it difficult to implement Japanese-style, long-term training in many American firms (Hashimoto 1994). The principal components of Japanese training, which Hashimoto identifies as instrumental in shaping Japan's highly productive labour force, are:

- reliance on self-study for technical training
- training of junior workers by senior workers
- sharing of information and responsibilities
- lifelong training by job rotation
- the occasional infusion of formal training throughout an employee's tenure with the enterprise

Although the diversity in the United States workforce has its benefits (for example, in encouraging individual creativity and independent thinking), nevertheless Hashimoto argues that lack of a homogeneous workforce in the United States raises the cost of training investments. Diversity tends to discourage investment in employment relationships and helps to explain why there has been greater focus on technical training than on overall employment relations in the United States.

Hashimoto (1994) showed that United States training programs, based on evidence from several major firms, are mostly directed at enhancing technical skills. Japanese automobile transplants in the United States, in the absence of Japanese-style relationships between educational institutions and industry, had to invest substantially in initial hiring; such large initial investments are not necessary for employers in Japan:

> *Because of the diversity in, and the low level of, the basic academic and technical skills of their new hires, these transplants must offer technical training that is much more circumscribed, and that involves more teaching of elementary skills, than their parent companies do.* (Hashimoto 1994, p.134)

However, if the practices found at Honda and Toyota are typical, transplant employees receive extensive training in team-building, communication skills, and other skills in employment relations (Hashimoto 1994, table 4.3, p.133).

Job characteristics

It is difficult to separate worker characteristics from job characteristics as key factors influencing participation in training and development activities by Australian employees, since the type of people in certain types of job is strongly interrelated. Using contemporaneous and longitudinal analyses however, Tharenou (1995) concluded that participation in training was predicted more by employee personal characteristics, such as gender, age and use of career strategies, and job-level factors of managerial level and occupational level, than by perceived organisational predictors of training policies and promotion ladders.

A summary of the perceived influence of job characteristics alone on participation is provided in table 2.

Table 2: Summary of job characteristics on the distribution of training

If the job is ...	then the incidence/intensity of training is ...		
	Blundell et al. (1996)	Groot (1997)	OECD (1999)
A professional/managerial job		Higher	
A full-time job	Higher	Higher	Higher
A permanent job			Higher
In financial & business services			Higher
In the public sector	Higher	Higher	Higher

Source: Long et al. (1999, table 5)

Enterprise factors

Enterprise size

The influence of size of enterprise on training activity is widely accepted, and was shown empirically to be an important factor by Hayton et al. (1996). Many other research efforts have demonstrated a supposed strong correlation between size of enterprise and training effort (for example, Blundell, Dearden & Meghir 1996; Groot 1997; OECD 1999).

However, the relationship between size and training activity is not a simple linear relationship—small firms do little training, large firms do a lot. Rather, small enterprises have different types of demand for training, and at any given level of demand they express their demand in characteristically different ways. This observation applies also to individual worksites that are part of larger, corporate structures. Hayton et al. observed that, given the propensity for site specificity in demand characteristics:

> *... outcomes will be just as effective when linking with enterprises at the level of the local worksite as when linking with them at the national, state, or organisational level.* (Hayton et al. 1996, p.9)

Smaller-sized enterprises are argued to have a number of disadvantages as training organisations when compared with larger enterprises. They tend not to have a wide range of job specialisations or positions, so learning new parts of a job rotation is less required (although, it might be argued that small enterprises have a higher need for 'generalist' skills). They are rarely likely to have a dedicated person or position looking after training (or even human resources more generally), and so might lack a 'champion' for the training cause.

The 1998 National Electrical Contractors' Association (NECA) report stressed the proliferation of small-to-medium-sized employers in the industry and the particular difficulties they face:

> *Small and medium-sized employers find the training system confusing and bureaucratic. They frequently lack the skills to deal with the system and, while appreciating the need to train new people for the industry, they are put off persisting with training. Their perceptions of the training system processes are often not based on a factual understanding. Even though the system recognises this, it remains difficult for a user or a potential user to gain access in a simple manner.* (NECA 1998, p.4)

Stokes (1998) noted that traditional vocational education and training arrangements are often not appropriate for small businesses, because it puts training first and business second. He argued that owners in small business cannot afford to invest in training not directly related to their work and that its success '... means profitability and survival' (Stokes 1998, p.25).

On the other hand, large businesses are more likely to see staff development as part of a long-term plan.

Freeland and Ball (2000) re-analysed data from the business growth and performance surveys conducted by the Australian Bureau of Statistics from 1994–95 to 1997–98. They concluded that, for private enterprises with less than 100 employees, there were several characteristics which affect the propensity of an enterprise to provide trade apprentice and trainee training:

The number of employees, mode of employment (full-time staffing level) and changes to employment are all significant factors which influence an enterprise's propensity to provide employment-based training ... The most important finding of this study is the support provided to the importance of a training culture, and the effect it has on employers' propensity to provide employment-based training. (Freeland & Ball 2000, p.11)

Freeland and Ball define training culture by reference to average training expenditure per employee. They argue that there are three principal elements of a training culture in small and medium-sized enterprises that emerge from their analysis:

The first principal element is the training experiences of enterprise decision-makers, second, is the level of union membership, which may be inter-related to industry-based findings, and finally, the training practices of the enterprise. The method of training delivery and the training providers used for training are both important influences in the creation of a training culture. (Freeland & Ball 2000, p.11)

Learning culture

In the nineteenth century, learning and training were seen as separate and distinct entities. While changes and developments have occurred over the last 100 years, a legacy remains where learning and training are somehow still perceived as separate (Stahl et al. 1993). A fragmented training system has resulted in ad hoc responses to qualification needs, rather than an ongoing process of learning built on a sound initial foundation. Senge (1990) stated that while it is tragic for an employee with learning disabilities, learning disabilities are fatal in organisations.

Covey (1999) supports Senge's views in his article 'seven chronic problems'. These problems can apply to organisations, departments and even individuals within organisations. Covey saw these seven problem areas as being:

- ✧ no shared vision and values at all levels of an organisation
- ✧ no strategic pathway or one that is inadequate for the organisation's needs
- ✧ poor alignment between structure, values, vision and/or systems
- ✧ a management style incongruent with the shared vision or inconsistent with the organisation's values
- ✧ poor skills to use an appropriate style of management
- ✧ low trust resulting in closed communication, little problem-solving, and poor co-operation and teamwork
- ✧ no integrity whereby there is little correlation between values and actions

Organisations who work towards solving these problems would, he argued, start moving towards becoming learning organisations.

Birleson (1998) after reviewing a number of articles, identified a number of characteristics of a learning organisation (table 1, p. 226). Combining Birleson's views with those of Bennett and O'Brien (1994), Coopey (1996), Beresford and Byers (1997), and Covey (1999), the characteristics of learning organisations shown in table 3 were identified by most authors.

The learning organisation according to Stahl et al. (1993) and Bennett and O'Brien (1994), is a conceptual framework for the future. Knowledge is important within this concept, and both the organisation and the individual need to embrace continuous learning, and the organisation must be able to adapt and change its culture. New approaches to learning will have many implications for organisations and individuals:

There will be new self-learning strategies; new roles for company trainers as training consultants; and as organisational development, project management and training development merge in the Learning Organisation, line managers and supervisors will also be required to adopt new roles.

(Stahl et al. 1993, p.xi)

In this last quote, a central outcome of instituting a learning culture is implied as 'lifelong learning'. From a parallel and broader perspective, the Australian National Training Authority has defined a 'training' culture as opposed to a 'learning' culture, the outcomes from which are

very similar (that is lifelong learning) but are shared not just by enterprises but also employees, the training community and the wider community alike. The definition offered by ANTA (2000) is as follows:

> *A training culture is a set of instinctive behaviours, beliefs and values, shared by all Australians … which leads them to a lifelong interest in vocational education and training and a visible commitment to participating and investing in both formal and informal training.* (ANTA 2000, p.20)

Table 3: Characteristics of a learning organisation

Organisational element	Structure and culture
Leadership	A daring and compelling vision statement/mission statement/ business plan is developed by all members. This document(s) is open to reshaping and redefinition and is freely available to all.
Perception	The organisation shows a positive attitude to risk-taking. Individuals and teams see mistakes as learning opportunities; they take responsibility for their own learning and discuss problems honestly and work towards solutions.
Learning	Learning occurs through benchmarking, conferences, visiting other centres, and listening to peers and customers. This encompasses both formal and informal situations.
Communication	Diversity of views, dissent and openness to ideas are encouraged and difference is appreciated. Two-way communication is encouraged—between staff and management, departments, other staff members.
Motivational system	The culture is based on a value system. Honesty, responsibility and integrity are valued. A reward-and-recognition system must support and encourage individual and organisational learning.

Human resource practices

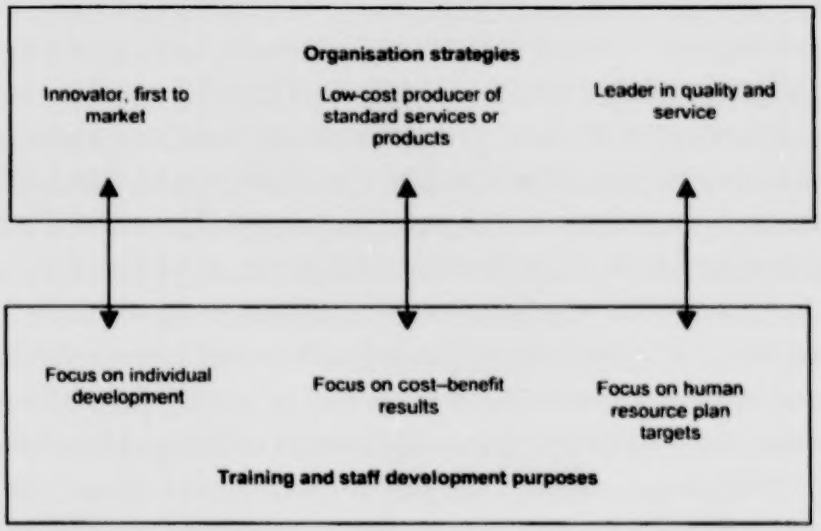
Studies by Ichniowski et al. (1996) and MacDuffie (1995) indicate that the human resource practices which operate in particular workplaces provide an important context within which training operates; and that any effect of training is likely to be mediated by those practices. Both studies conclude that increased levels of training may be ineffective without a surrounding context of flexible human resource strategies. If so, then the absence of information about work practices in many studies of the incidence and outcomes of training is a significant limitation. There is some question about the appropriateness of certain flexible workplace strategies for smaller firms (Long et al. 1999, chapter 6).

Kane, Abraham and Crawford (1994) proposed three main purposes that enterprises might espouse as desired outcomes of training effort. They attempted to fit a number of top 500 companies surveyed into one of these three categories. The three purposes were: focus on individual development; focus on cost–benefit results; and focus on human resource plan targets.

They found a relationship between these training purposes and the broader organisational strategies adopted by an enterprise. The relationships between organisational strategy and training purpose are illustrated in figure 2.

The first and third organisational strategies noted in figure 2 are most conducive to high levels of training investment, if the cost–benefit approach sees training as a 'cost' to be minimised. The organisational strategy 'leader in quality and service' allied with a 'focus on human resource plan targets' as the training purpose is the combination which appears to be most likely to result in significant training effort. Kane et al. (1994) found few companies with executive managers who espoused the human resource plan approach. The most common training purpose was a focus on individual development, with a further third of company executive managers favouring the cost–benefit approach. In practice, those favouring a cost–benefit approach were more interested in saving money. This equated to a general lack of interest in training *per se*.

Figure 2: Organisational strategy and training purpose relationship


Organisation strategies
Innovator, first to market
Low-cost producer of standard services or products
Leader in quality and service
Focus on individual development
Focus on cost–benefit results
Focus on human resource plan targets
Training and staff development purposes

Workplace change

Groot (1997) suggests, as has been noted previously by other writers, that a change in production methods is frequently accompanied by training to reskill workers. He argued though that, if technical skills depreciate more quickly and become obsolete faster than other skills, then the returns to investments in technical training will tend to be lower than for other types of training (which is what he found). In addition, technical training may be more firm-specific, so that a greater proportion of the returns from the training investment may accrue to the employer rather than the worker. If the change in production methods implies an increase in productivity however, the trained workers may benefit through higher wages.

Some of the above arguments are not supported by other research. For instance Blandy et al. (1999) found through examination of a number of matched enterprises that enterprise returns to training can be exceptionally high, especially for training that is:

> ... *highly specific, rapidly accomplished, and related to the introduction of new technology or working patterns. Such training pays a firm, even if labour turnover is high.* (Blandy et al. 1999, p.4)

Change, more generally, can be a strong influence on training. Hayton et al. (1996) found, apart from industry sector and enterprise size, the greatest influence on training activity was workplace change. Enterprises having a high level of workplace change tended to have a greater volume and more diverse training.

> *Introducing new ways of working, implementing a quality assurance program (such as TQM) or the introduction of new technology are, by far, the most common reasons for companies to start training their employees.* Smith 1997, p.13)

Selby Smith and Selby Smith (1996) illustrate training's role in a major work restructuring exercise. They found that training, defined as a formal process involving instruction, appeared to have made a significant contribution to the effective implementation of the new working arrangements proposed for Australian Public Service (APS) enterprises. However, the relative importance of training varied among the different objectives of the restructuring exercise (and training's contribution could be indirect as well as direct). The study showed that changes in work organisation, technology, corporate management arrangements and the development of skills and training processes are all connected, so that changes in one element were likely to cause changes in others. Thus, analyses of the effects of training, and consequently, the incentives facing enterprises considering whether to implement training programs in particular industries, are likely to be incomplete if they do not take these interrelationships into account. Of course,

training was generally seen as a means of achieving agency objectives rather than undertaken for its own sake.

In a similar environment of enterprise restructuring (corporate decentralisation), Hendry argues that, at least in Britain during the 1980s, benefits to training activity resulted. Decentralisation was frequently accompanied by the creation of corporate internal labour markets in large business groups, which shifted the focus of personnel departments from industrial relations to training and development (Hendry 1991).

Trainers' actions

A recent Australian study by Harris and Simons (1999) has emphasised the significant ways in which the nature of work impacts on the learning process and the critical role which can be played by workplace trainers in managing the structure of work so as to facilitate learning. They identify 32 trainer actions when working with individuals or small groups of employees who are learning on the job. They group these trainer actions into five functions:

- fostering an environment conducive to learning
- working and learning with co-workers
- structuring and shaping work processes to accommodate learning
- promoting independence and self-direction in workers
- linking external learning experiences with work and learning in the workplace

Their data showed that all of these trainer actions were reported as being common in the workplace. Of the 32 trainer actions, 22 were taken 'often' or 'very often' by more than half of the sample and all but one were taken frequently by at least a quarter of the respondents. There were few responses in the 'not applicable' category. They concluded that:

> ... *arguably the most striking aspect of these data, however, is the extent to which workplace trainers structure and shape work processes to accommodate employee learning.* (Harris & Simons 1999, table 1, pp.37–8)

These actions included monitoring workflow and quality (79%), organising work so they can be given tasks to tackle on their own (76%), managing the flow of work to help them learn (71%), planning the structure of work so they are able to join in and work at a level best for them (66%), organising work so they are able to tackle a variety of tasks (65%) and making judgements about the balance between the need of the employee to learn and the need to get the job done (64%).

Industry sector

The industry sector in which an enterprise operates has been shown through ABS survey statistics to be a strong predictor of training effort at the enterprise level (see for instance ABS 1998). Figure 1 earlier in this chapter also illustrates the marked differences evident between industries on one dimension of training activity.

Hayton et al. (1996) found that industry sector, along with enterprise or worksite size, were the two most powerful variables in explaining variation in training activity between Australian enterprises. The explanation for the effect of industry sector lay in the nature of institutional vocational education and training arrangements within particular industries, and in the culture and traditions of those industries.

> *Results of the study suggest that variation between different industries in the institutional arrangements for vocational education and training influences the level and character of training within particular enterprises.* (Hayton et al. 1996, pp.8–9)

Indeed it is a common hypothesis that qualifications appear to be more valued in industries where traditionally only tradespersons and professionals were qualified. Curtain (1994) however, suggests that one outcome of the training reform agenda in Australia has been the rise of new forms of training effort in historically 'non-training' industries. He notes the emergence of a new qualifications-based labour market for base-grade or entry-level personnel, broadly classified as

'operators'. Such qualifications-based labour markets have emerged in industries such as vehicle manufacture, food processing, textile, clothing and footwear, cement manufacturing and hospitality industries. Employee representative organisations have played an important role in linking the qualifications to industrial classification systems, including remuneration and promotion (Curtain 1994).

Hayton et al. suggested that industry sector in fact should be viewed more as a proxy variable for a set of training arrangements. They then described various industry profiles, highlighting the differences between industries in arrangements for entry-level training requirements and the degree of uniformity across industries. As such, one would expect industry sector to be more powerfully related to *type* of training than to the *extent* or volume of training. Curtain (1994) notes in fact that there are considerable differences between employers in the degree of engagement with the training reform agenda, and that at least some of those differences relate to industry background.

Environmental factors

Economic climate

Blandy et al. (1999) found a range of micro and macro economic conditions that seem to influence enterprise-level training. In terms of quantity of training activity, they found that hours of training given by Australian firms is directly related to product–market uncertainty and unpredictability; and also to other forms of capital investment in innovation, physical capital, and research and development. The quantity of training provided by enterprises was also found to be inversely related to involuntary labour turnover. In terms of training quality, Blandy et al. concluded that the types of training provided by Australian enterprises are directly related to the presence of internal labour markets and to other forms of capital investment by firms and competitive product market conditions.

Marshman and Associates (1996, p.24) argues that the major barriers to the employment of more apprentices, as perceived by Australian employers, are a mixture of micro-economic reform issues '… focussed squarely on employment and industrial relations aspects'. This includes industry restructuring and decisions to outsource a wide range of functions, which have impacted on employers' capacity to employ apprentices. Outcomes included unpredictable and shorter contract cycles, increased reliance on sub-contracting and specialisation:

> *… a massive growth in labour hire associated with outsourcing and the need to staff seasonal and production peaks … a significant growth in traineeships due in part to the shorter employment commitment … [and] a significant growth in group training largely because it is the only mechanism available to overcome problems associated with shorter contractual cycles, and thereby reduce the employment risk.*
>
> (Marshman and Associates 1996, p.25)

In a 1997 report Marshman and Associates argue that:

> *… the apprenticeship system for manufacturing industry in Victoria is on the brink of a crisis … The problem is not confined to Victoria … There is widespread pessimism about the future of manufacturing industry … Despite the lack of confidence there appears to be widespread skill shortages.*
>
> (Marshman and Associates 1997, pp.4–5)

A later report by the National Electrical Contractors' Association on the employment of apprentices in the electrical, electronic and communications industry documented:

> *… The number of in training in either apprenticeship or traineeship declined (in Victoria) by 44.6% from 5916 1988/89 to 3279 as at June 1997 … The decline in new entrants in the electrotechnology industry is common to all States and Territories.* (NECA 1998, p.12)

The report also noted major regional differences that reflect variations in the economic base and the importance of the economic cycle in the training decisions made by employers.

Competition

Several authors have identified increased exposure to competition as a potentially powerful influence on enterprise training activity (for example, Ergas & Wright 1995; Marshman and Associates 1996; Hayton et al. 1996). There is some debate however, as to the direction in which competition drives enterprises, and the strength of any influence. Marshman for instance, found that increased competition in the building/construction industry could have a negative effect on training activity, presumably lower margins, resulting in the cutting of more expendable overhead costs. Ergas on the other hand, in his 1994 study of Australian manufacturing firms with Mark Wright, found that intensified competition, whether through expanded international exposure or otherwise, tended to force managers to tackle inherited inefficiencies. The actions which managers can take include greater emphasis on training, as well as on other areas such as research and development; product quality and customer satisfaction; and the development of more productive co-operative cultures within enterprises (Ergas & Wright 1995).

Fraser (1996) disputes whether competition is indeed an important factor. Fraser found that when Australian employers were asked why they had increased their training expenditures, only 9% of firms which had reported an increase in training in the previous year suggested that this was the result of competition. In fact, competition was the least reported of all the suggested factors; only 3% considered it to be the most important factor driving their increased training expenditure. Fraser suggests that perhaps competition was a more important factor in larger firms, older firms and firms that already provide a high level of training. In an attempt to reconcile his findings with those of Hayton et al. (1996), he suggests that the training market is segmented; that is, high-training firms compete with high-training firms and low-training firms compete with low-training firms. An alternative explanation is offered by Dutneall, Hummel and Ridoutt (1998), who hypothesised that different forms of competition have different effects. Thus, competition based on quality of products or services is likely to increase the need for training, whereas competition on the basis of price will at best be neutral in respect to the influence on training activity.

A study of leading-edge enterprises in a number of Australian industries by Burke et al. (1998) found that training for skills in new technology areas was, in the first instance, usually provided on an in-house basis by established training departments. They also found that each enterprise had experienced deficiencies in the existing institutionalised systems of training in terms of their capacity to meet emerging skill requirements. Interestingly, each company had a dominant profile within its industry sector, which allowed it to set standards for sub-contractors and component suppliers, so that the enterprise was acting as teacher and diffuser of technology and skills to supporting companies.

Groot (1997) identified a possible relationship between training and the market power of the enterprise in relevant product markets. Groot indicated that monopolistic power in product markets increases the returns to labour and capital, and the returns to training as well. Also, firms which exercise significant market power may have a greater need to train their workers, as some of the skills necessary for production will not be taught within training organisations; for example, because they can be made productive in only a few firms.

Industrial relations

Elsewhere it has been noted that membership with a union body can enhance the opportunities for a worker to obtain training. Historically, there have been close links between training in the workplace and industrial relations in Australia. Teicher and Grauze (1996) argue that:

> *Recent experience with enterprise bargaining has been infused with the objective of directly increasing enterprise efficiency and indirectly, international competitiveness.* (Teicher & Grauze 1996, p.270)

Typically, employees have had to make concessions in order to improve productivity and reduce costs. The measures they identify in agreements to improve efficiency have been wide-ranging;

for example, new technology, work reorganisation, training opportunities, performance appraisal, performance-based pay, temporal flexibility, and broadbanding. Many of these changes have required training in themselves and this was sometimes reflected in enterprise agreements; more often, the agreements included a training provision, such as a commitment to training or to the establishment of a training program, consultation on training or training leave. Teicher and Grauze conclude that:

> *... by and large, these commitments appear to have rested on the assumption that training will enhance enterprise productivity, though the data are equivocal on whether this expectation generally has been met.*
>
> (Teicher & Gauze 1996, p.270)

Interestingly, a study of the major reorganisation of office-based work in Australian Public Service enterprises concluded that the expanded commitment to training by APS management and individual agencies was important in securing co-operation from other major stakeholders, such as staff and unions, for the introduction of other efficiency-enhancing changes. These were wider than, perhaps even unrelated to, the implementation of the particular office-based work reform (Selby Smith & Selby Smith 1996).

Legislation

Teicher (1995) and Fraser (1996) both discussed the former Training Guarantee levy and their conclusions are rather different, Teicher's assessment being more critical than Fraser's. The objectives of the guarantee:

> *... included spreading the costs of training more equitably among employers and thereby increasing the volume of training, changing industry perceptions of the value of training, improving the quality of training, and making training opportunities more accessible to disadvantaged groups.* (Teicher 1995, p.111)

In the first three years after the French system of training levies was introduced in 1971, training expenditure by enterprises grew by 70% and the percentage of employees receiving training increased by 50% (Fraser 1996). Interestingly, however, enterprise expenditure on training in France as a percentage of wages and salaries has increased every year since and has been consistently above the minimum.

The Training Guarantee scheme in Australia was introduced in 1990 and suspended in 1994. Under it, if the required amount was not spent on training, then the levy became a tax with any outstanding balance paid into consolidated revenue. When firms with a payroll of less than $200 000 p.a. (adjusted annually) were exempt (that is, about 6 to 8 staff), Fraser concluded that the effects were fairly positive. Fraser found that, for businesses with 20 to 99 employees, in the four years the scheme operated, it contributed to a growth of 60% in average expenditure per employee and contributed to a growth of 30% in average hours of training per employee (Fraser 1996). Although Robinson notes that such firms account for only 15% of total training expenditure in Australia (Robinson 1999), 40% of eligible employers believed that the scheme had led to improvements in their methods of training and the way they planned their training. For every additional government dollar spent, some $20 to $100 of total new training expenditure was generated (Fraser 1996).

Of course, the training levy represents a relatively blunt approach because it treats all firms equally. In fact, if studies of the distribution of formal training in enterprises show anything, it is that different enterprises require different levels of training. One of Fraser's major findings was that the Training Guarantee had raised the awareness among Australian managers of the need for workforce training to achieve enterprise objectives. Teicher notes that, among employers with adequate resources, the requirement to record training expenditures facilitated the development of systems to better monitor and develop a strategic approach to training expenditures. The guarantee probably induced additional enterprises to undertake formal training and to give more explicit consideration to training. However, Teicher argues that there could be no assurances regarding the quality of training (Teicher 1995).

Models for describing training activity

There have been many models proposed which attempt to describe the factors influencing decision-making in enterprises relating to training (type, level and quality) in an effort to predict likely training activity outcomes. A few are discussed here.

Seddon and Clemans (1999) identified three models of organisational decision-making in the 17 VET providers included in their study. The three models they identified were:

- an informal model, comprising less than one-fifth of the enterprises they sampled
- a strategic planning model, almost 60% of the enterprises
- a capacity-building model, about a quarter of the enterprises

The last of these three models was the most propitious for training activity and where 'growing the skills and capacities of staff was viewed as the key driver in growing the enterprise' (Seddon & Clemans 1999, p.197).

The research program initiated and led by Prais and Steedman (1986) was designed to test the relationship between vocational education and enterprise productivity, where the latter was taken to mean units of output per time period per worker employed. The hypothesis was that initial, pre-employment vocational education is a major contributor to enterprise productivity, since it raises the skills of workers and these are applied through more effective work practices. By adopting an inter-country comparisons approach, Prais and his colleagues, in a series of studies, each involving Britain and one or more other countries, identified establishments of similar size, each producing similar products, for which they could compare:

- worker productivity
- management practices
- technologies employed
- workplace organisation
- on-the-job training
- the level and type of workers' vocational qualifications
- the curriculum content of those qualifications

National economic data provided further information on productivity, with respect to Germany, France, the United States of America and The Netherlands. The influence of vocational and school education has been a dominant concern of the research. Prais and Steedman conducted:

- studies of matched products (for example, biscuits, fitted kitchen furniture or women's outer garments)
- studies of paired enterprises (in paper-making, information technology, mechanical engineering, electrical engineering, and paint and industrial coatings manufacture)
- broad studies in five industry sectors (building, distribution, hotels and catering, transport and communications, finance and business services, and retail)

Although the research program of Prais and his colleagues has been criticised (Cutler 1992; Chapman 1993; Shackleton 1995), Maglen and Hopkins saw merit in:

> *... utilising a similar approach to shed light on the way that skills are contributing to productivity in Australian enterprises.* (Maglen & Hopkins 1998, p.22)

Maglen and Hopkins (1998) emphasised that the Prais model recognises:

- the contribution of worker skills to the achievement of high productivity levels in good quality and customised products and services
- the importance of mathematics, science and technological studies in general education as a basis for vocational education and employment
- that both vocational education and on-the-job training may combine workplace-based and non-workplace-based learning

- ✧ that vocational education can be undertaken either pre-employment or concurrently with employment and may be undertaken many times throughout life because of occupational change
- ✧ the importance of broad skilling, and adequate assessment of underpinning knowledge and conceptual skills in vocational education
- ✧ the synergy of the workplace culture, the technologies employed, the practices that management chooses to effect, the style of communication and participation it promotes and worker skills

Studies undertaken by the Centre for Corporate Strategy and Change at the University of Warwick (Sparrow & Pettigrew 1985; Hendry & Pettigrew 1989) identified two sets of factors that affect the provision of training in their sample of enterprises. These were factors that set training in progress (triggers); and factors that establish training within the enterprise (stabilisers). In their view, training is only stabilised by a combination of factors inside and outside the organisation, and legislative requirements. Factors inside the organisation include a training champion, senior management commitment, training infrastructure within the organisation, budgetary constraints, and trade unions which act as a watchdog on training provision. Factors outside the organisation include the availability of skills on the labour market and external support, such as grants for training.

The Hayton et al. model

One of the most comprehensive models proposed based on Australian research has been that developed by Hayton et al. (1996). This model's development was influenced by studies undertaken by the Centre for Corporate Strategy and Change (University of Warwick) into the role of training at the enterprise level.

The Hayton et al. research project, commissioned by ANTA, commenced in 1994. The initial phase of research was based on data collected from 30 case studies (ten in each of three industry sectors: building and construction; electronics equipment manufacturing; and processed food and beverages) and identified a number of factors which appeared to significantly affect the demand for training by enterprises. These included competitive pressures, work reorganisation, new technology, quality, industrial award restructuring, the size of the enterprise, its training infrastructure and the level of training decision-making (reported in Smith et al. 1994).

Further study was undertaken in 1995 and 1996 for the same clients, and by essentially the same research team to:

- ✧ study training practices in individual enterprises
- ✧ obtain information about how enterprises and industries approached the making of decisions about training
- ✧ examine the relationship between enterprise objectives and training practices
- ✧ identify factors that appear to 'trigger' the demand for training
- ✧ identify the types of training preferred by industry

This phase of the project involved a national survey of 1760 worksites across most industries in Australia (McIntyre et al. 1996) and a further 12 case studies in two industries (finance and insurance and retail).

Analysis of information gathered in this phase of the research identified five possible primary drivers of training:

- ✧ customer focus
- ✧ technological change (in the finance and insurance industry, but not in retail)
- ✧ workplace change
- ✧ the enterprise's commitment to training
- ✧ decision-making at an individual level

In relation to the last two drivers Noble, Smith and Gonczi (1996) commented that they found 'considerable variation across the enterprises'..

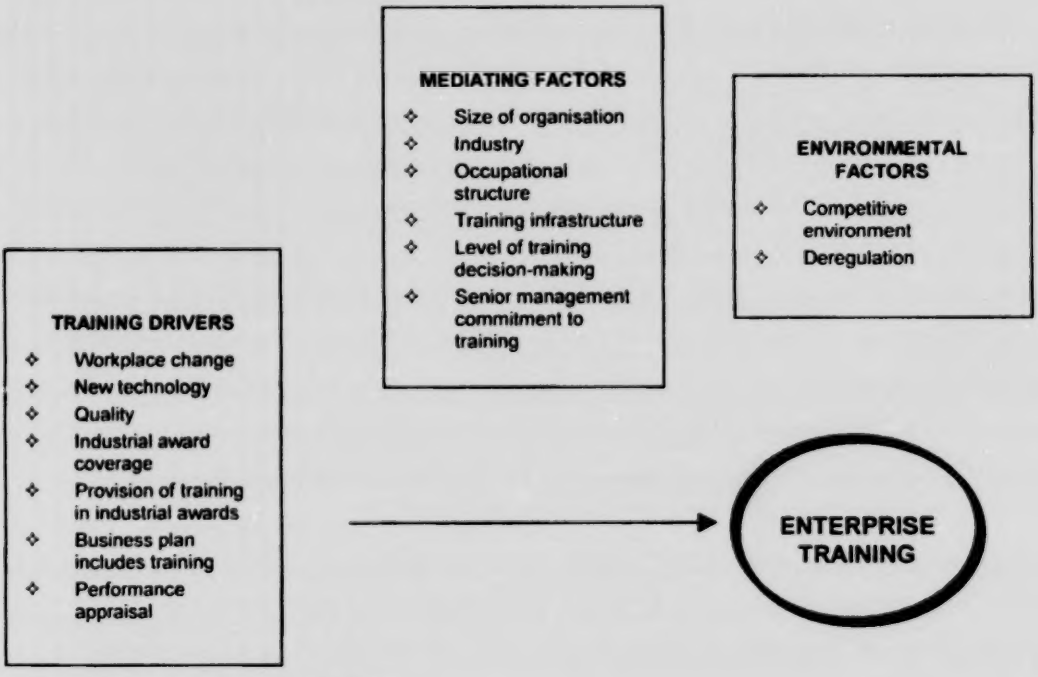
The industry survey revealed that two main factors appeared to be strongly related to training (the nature of the industry; and the size of the worksite and enterprise), while 'a further seven factors were found to be weakly to moderately related to training' (Hayton et al. 1996). These seven factors were: workplace change; industrial awards with training clauses; coverage of employees by industrial awards; business plans which include training; the proportion of managers and professionals in the workforce; quality management; and new technology and product innovation.

The Hayton et al. research team concluded that enterprise training[2] (both in nature and extent) was largely dependent on three main elements as follows:

- *training drivers:* defined as factors within the enterprise which trigger training activity and which are perceived by those within the enterprise as the reason for training activity in one or more of its various forms
- *environmental factors:* conditions in the enterprise's operational environment which impact on the enterprise and tend to generate one or more training drivers (for example, competitive pressure and changes in government regulations)
- *mediating factors:* factors within the enterprise which diminish or increase the amount of training activity and/or affect the form of training activity (for example, organisation size and the main activity (industry) of the enterprise)

The relationship between these elements is illustrated in figure 3.

Figure 3: Main factors in the general model of enterprise training



Source: Hayton et al. (1996, figure 1.2, p.6)

2 'Training' was considered by the research team to include all forms of skill formation activity relevant to the operation of the enterprise. This includes formal and informal training, and on-site and off-site education and training.

Hayton et al. (1996) argued that the influence of each of the factors in figure 3 varies according to which particular aspect of training is considered. For example, the volume of training was found to be influenced most by size of enterprise, industry, occupational structure, new technology, and the extent to which training featured in the business plan.

Conclusion

Smith suggested that, while the general thrust of the Warwick model was confirmed by the case studies undertaken by Hayton et al., the model's explanatory power was limited:

> *In particular, the [Warwick] model fails to come to grips with the diversity of training outcomes that is a central feature of the findings [of the Hayton et al. study].* (Smith 1995, p.103)

Overall, Hayton et al. concluded that their model provided:

> *... a good representation of the factors of enterprise training and their relationships ... the model explains much of the variation in training.* (Hayton et al. 1996)

In general, they argued that the case study and national survey results mostly support the findings of other research efforts, but that their findings suggested more complexity in the relationship between training drivers and enterprise training.

In truth, and as has been pointed out earlier in this chapter, there are several different ways of organising findings to create a logical model for predicting enterprise training effort. Each model will have its merits and deficiencies. In this study, a choice has been made to conduct research that will build onto and, it is hoped, enhance the model espoused by Hayton et al. for a number of reasons including:

- It is based on the findings of an extensive Australian research effort, using data collected through empirical research from Australian enterprises.
- It is specific to vocational education and training.
- The model is dynamic, allowing for interaction between factors that might enhance or reduce influence in different circumstances.

In the following chapters the method, findings and interpretations of the current study are detailed and discussed.

3 Profile of industries in the study

Industries included in the study

Earlier studies of the influence of different factors on enterprise training have tended to focus on single industries, sometimes even specific sectors within those industries, largely as a result of constrained methodological choices. Quite different have been the series of studies reported by Hayton et al. (1996), that deliberately attempted to sample across a broad range of industry and geographic circumstances. In relation to industry sectors, through either cases studies or telephone interview survey, the main industries covered were finance and insurance, retail, machinery and equipment manufacturing, construction, and food and beverage manufacturing.

It is worthwhile describing here the industry context for this study; that is, the type of employers from which data were collected. This helps explain the composition of the research team, detailed in the introductory chapter. The two industry training advisory boards (Manufacturing Learning Australia and CREATE), who between them cover all of the selected industries, are both included in the research consortium team. The industry context also helps to establish early in the study report, some parameters around the study findings.

Enterprises from the following five industry sectors were surveyed:

- chemical and oil
- manufactured mineral products
- plastics rubber and cablemaking
- entertainment
- libraries and museums

The entertainment, library and museum industry sectors do not appear to have been the focus of research attention previously, and were definitely not included in the Hayton et al. (1996) studies. The manufacturing industries included in this study were possibly surveyed in the Hayton et al. studies, but constituted less than 10% of the interview survey population and did not contribute to the case-study data.

Characteristics of selected industries

The chosen industry sectors, with the exception of libraries and museums, are characterised by:

- low level of formal qualifications (Ridoutt & Willett 1994; Hummel 1995) and poor uptake of government funding programs in support of accredited training (Dutneall, Hummel & Ridoutt 1998). It is estimated that the industries included in this study accounted for less than a 5% share of total 'VET' training hours delivered in 1998 (Robinson 1999)
- low recognition of competencies acquired by industry workers (see table 4, note that the Manufactured Mineral Products and Libraries and Museum Training Packages were only endorsed in 1999). The figures in table 4 need to be compared with the average training package achievement of 22 563 units of competency. The three training packages relevant to

this study are amongst a group of training packages with the lowest levels of competency recognition

- ✧ absence of a strong tradesperson's culture (although several of the industries, notably the plastics industry, are quite closely associated with the metals industry and have long aspired to introduce an industry-specific 'trade' qualification)
- ✧ high levels of ('unrecognised') training effort, with several of the industry sectors (for example, chemical and oil, cement, paint) engaging in significant structured on-the-job industry training that receives wide industry acceptance (Dutneall, Hummel & Ridoutt 1998)

Table 4: Training package implementation: units of competency achieved at 31 December 1999*

Training package	States in which units of competency achieved								Total units achieved
	NSW	Vic.	Qld	SA	WA	Tas.	NT	ACT	
Chemical and oil**	–	✓	–	–	–	–	✓	–	92
Entertainment	–	✓	–	✓	–	✓	✓	–	554
Plastics, rubber and cablemaking**	–	✓	–	✓	–	–	–	–	0

Notes: ✓ = enrolments in this training package in 1999
– = no enrolments in this training package in 1999
* During 1999, 812 271 training package units of competency were reported as achieved across all industries.
** A number of enrolments in these industry sectors is still in courses that pre-exist the introduction of the training package.

Source: ANTA (1999)

Some of the manufacturing industry sectors are also characterised by significant levels of capital investment. This is particularly so in the case of the continuous process manufacturers (for instance in the chemical and oil, petroleum and cement manufacturing industries). On the other hand, the batch process operations in these same industries can also include very small 'backyard' enterprises.

The library and museum industry sector is different from the other industry sectors insofar as formal qualifications are more prevalent, and courses widely accepted by the industry pre-exist the introduction of the training package. To a large extent enterprises expect qualifications to be held by prospective employees. This places libraries in particular in a quite different 'cultural' setting from other industry sectors, resembling more a professional service enterprise culture (with its stronger relationship with the formal vocational education and training sector).

Dixon and Rimmer (1996) predicted positive employment growth in all the industry sectors included in this study, although the projected annual growth rate varied considerably between industry sectors (see table 5). All but the plastics, rubber and cablemaking industry sectors were in the top half of projected industry performance.

Looking at actual employment growth outcomes between 1987 and 1997 (Robinson 1999), the entertainment and cultural industries have experienced very high levels of growth (almost 50%), while growth in manufacturing industries in general has declined slightly (minus 3%).

Table 5: Employment—average annual percentage growth rates for selected industry sectors

Sectors	Percentage growth in employment per annum		
	1986–87 to 1994–95	1994–95 to 2002–03	Rank based on forecast (out of 22 industry sectors)
Top growth industry: Construction	1.6	4.7	1
Chemical, petroleum and coal products (Chemical and oil)	0.9	3.1	5
Non-metallic construction material (includes manufactured mineral products)	-0.1	2.5	7
Hospitality, leisure and personal services (includes entertainment, libraries & museums)	3.3	1.7	9
Leather, rubber, plastic and other products (includes plastics, rubber and cablemaking)	1.4	1.4	12
Low growth industry: Public administration and defense	0.5	-1.3	22

Source: Dixon and Rimmer (1996)

In the following sections some brief characteristics of each of the industry sectors is outlined.

Process manufacturing industries

Three of the industries included in the study population are covered by the Manufacturing Learning Australia Industry Training Advisory Board (MLA ITAB). Collectively, these mainly heavy manufacturing industries are often referred to as 'process manufacturing' industries. These industries are itemised under the Australian and New Zealand Standard Industrial Classification (ANZSIC) and are accounted for by relevant training packages.

Table 6: ANZSIC code, industry sector and training package

ANZSIC Code	Industry sector name	Training package
ANZSIC 12 ANZSIC 251–254	Oil and gas extraction Petroleum, coal and chemical product manufacturing	Chemical, oil and hydocarbons
ANZSIC 255–256 ANZSIC 852	Rubber and plastic product manufacturing Electric cable and wire manufacturing	Plastics, rubber and cablemaking
ANZSIC 26	Non-metallic mineral product manufacturing	Manufactured mineral products

Workforce demographics

The process manufacturing industry employs 163 000 people, around 15% of total overall manufacturing employment. Of these 29% are employed in chemical product manufacturing and 28% in the plastics, rubber and cablemaking (MLA 2000).

Since the early 1990s there has been a slight downward trend in aggregate employment for the process manufacturing industries from 174 000 in 1990–91 to 163 000 in 1999–00. Process manufacturing's share of the total Australian workforce has decreased from 2.2% in 1990–91 to 1.9% in 1999–00. By comparison with the remainder of the manufacturing industry, the decline has been slight (15.4% in 1990–91 to 15.1% in 1999–00).

The trend in 'non-standard' working arrangements has followed that of the general Australian workforce with casual employment in manufacturing more than doubling in just over a decade (6.7% in 1984 to 15% in 1996).

The qualifications profile of the process manufacturing industries compares unfavorably with that of the overall workforce, although it is broadly in line with the overall manufacturing

workforce. However, the profile of the non-metallic mineral product group is significantly inferior (see table 7).

Table 7: Educational attainment of workforce (highest level achieved) by selected industry (% of industry total)

Industry sub-division	Degree or diploma (%)	Skilled/basic vocational (%)	Post-school quals (%)	No post-school quals (%)
Petroleum, coal, chemicals and associated products	29.7	16.8	46.5	53.1
Non-metal manufactured mineral products	13.8	26.0	39.8	60.2
All manufacturing	17.1	29.7	46.7	52.8
All industries	27.4	22.6	50.0	47.7

Source: ABS (1998 cited in Dutneall, Hummel & Ridoutt 1998)

The process manufacturing workforce is skewed towards the middle and older age groups relative to both total manufacturing and to total employment across all industries. In the oil and gas extraction sector, 82.1% of the workforce are over 35. This group accounts for only 57.3% of the total workforce and 59.1% of the total manufacturing workforce.

Organisation demographics

Despite the decrease in workforce of about 1.4% per annum, productivity in process manufacturing enterprises has risen quite substantially with over half of the sectors reporting productivity increases of between 0.7% and 10.9% over the past three years. This finding is closely linked to the rate of technological change. As shown in table 8, process manufacturing industries are significantly more likely to undertake technological innovation than are enterprises within manufacturing as a whole.

Table 8: Proportion of manufacturing businesses undertaking technological innovation by selected industry

Industry sub-division	Type of technological innovation		
	Product (%)	Process (%)	Total (%)
Petroleum, coal, chemical and associated product manufacturing	34.4	29.3	42.1
Non-metallic manufactured mineral products	32.6	20.7	35.5
All manufacturing	22.9	17.8	26.0

Plastics, rubber and cablemaking sector (PRC)

The plastics industry is seen as a strategic sector in the manufacturing industry due to the wide range of manufacturing skills and processes utilised, the extensive interface with other industries and the rate of technological change within the industry (Fuller & Hastings 1993).

The plastics industry is characterised by high levels of full-time employment (92% in 1987). The PRC sector includes all sizes of industries from micro to very large, but in the plastics industry in particular, there is a larger-than-average proportion of small enterprises.

Chemical and oil

The chemical and oil sector is characterised by a high revenue turnover. In 1991–92 the total turnover ($7245.8 million) comprised 15% of New South Wales's manufacturing turnover, making the industry the third largest in the State. Despite the high turnover, the chemical and oil industry is now the third smallest manufacturing industry in terms of workforce size. This

indicates a sector that is less labour-intensive than most other manufacturing industries (Ridoutt & Willett 1994).

The industry can be divided into two clear segments—those enterprises producing by means of continuous chemical processing operations, and those using batch chemical processes. The former enterprises tend to be large, high-capital investment and often state-of-the-art manufacturers, such as oil refineries. The latter are generally smaller, low-cost plant operations, producing chemical products such as soaps and detergents, cosmetics and adhesives. All sectors of the chemical and oil industry are extremely sensitive to environmental claims (often levelled at the industry).

Manufactured mineral products

The manufactured mineral products (MMP) sector is similar to the chemical and oil sector in that enterprises range from continuous processing enterprises with highly technical plant and considerable investment (glass and cement manufacturers) to low-cost plant enterprises producing simple products (for example, some concrete products).

The MMP sector is really a 'created' sector, since the training package covers several sectors that would not normally associate with each other. For instance glass products manufacturers would normally have little in common with tile-makers.

Parts of the industry have significant ownership concentration. For instance the small number of cement manufacturing enterprises is owned by few actual parent companies, but through a complex web of cross-ownership arrangements.

Only recently, some sectors are becoming exposed to global market forces as a result of significant importing, and they are finding world best practice of many the overseas producers to be much greater than the generally smaller producers in Australia.

Cultural industries

The cultural industries contribute significantly to Australia's social and economic wellbeing. Each year the cultural industries create $19 billion worth of goods and services or 2.5% of gross domestic product. The CREATE Australia ITAB provides coverage for the cultural industries, which includes:

- community cultural development
- design
- entertainment
- film, television, broadcasting and radio
- libraries and information services
- multimedia
- museums and galleries
- music
- performing arts
- visual arts and crafts
- writing, editing, publishing and journalism

Workforce demographics

According to the ABS, the number of people in paid employment in the cultural industries increased from 274 700 in 1993 to 447 100 in 1999, an increase of 61%. Table 9 outlines the relative workforce participation in each of the main cultural industry sectors. There are estimated

to be even more working in a voluntary capacity in a range of community theatre and similar enterprises.

Table 9: Involvement in selected cultural activities

Industry sector	No. of people employed	Percentage receiving payment	Training package
Arts organisations and agencies	102 000	35	Entertainment
Film production and cinema/video	72 900	40 (film) 50 (cinema)	Film, television and multimedia
Radio and television	142 100 (radio) 91 200 (TV)	25.2 (radio) 69.3 (TV)	Film, television and multimedia
Heritage organisations, museums and art galleries	59 100 (heritage) 45 800 (museums) 59 000 (art galleries)	18.4 (heritage) 16.8 (museums) 33.3 (art galleries)	Libraries and museums
Libraries and archives	143 100	45.8	Libraries and museums

Almost half of the involvement in the cultural industries is of a short-term and part-time nature, being 13 weeks or less in duration and less than 10 hours per week. The 35 to 44-age group had the highest rate of work involvement while the proportion of people who received some payment for their work was highest in the 25 to 34-age group.

Nearly one million Australians have completed a qualification in one of the arts or cultural fields. However, almost 50% of people working in the cultural industries have no post-school qualifications. In 1999, approximately 43 207 undergraduates were enrolled nationally in vocational education and training courses appropriate to the cultural industries (including graphic arts, design, film, radio, TV and libraries). However, accredited training in some sectors of the cultural industries is virtually non-existent (CREATE Australia 2000).

Entertainment

Enterprises within the entertainment industry are typically small, with a large percentage of the workforce as part-time, casual or volunteer. It is an industry with very low levels of qualification.

The enterprises in this industry range from national icons (Opera Australia, Sydney Opera House) to companies which make fireworks displays. Less obvious inclusions in the industry are events management companies, cinema halls and amateur theatre companies. According to Dixon and Rimmer (1996, p.253) the entertainment industry has 'above average prospects' for growth as consumer preferences shift towards its products.

Libraries and museums

This industry sector is characterised by high levels of formal qualifications. Within this sector, formal qualifications are an important basis for recruitment, deployment and salary system decisions. The VET sector offers a range of qualifications that fit with the traditional higher education qualifications for librarians and curators.

Libraries range in size from small specialist units within single interest organisations to large organisations in their own rights (for example, in university settings). Museums have a similar range across a wide variety of sizes and purposes, the Australian Museum On-Line estimating that there are over 1000 museums in Australia. This includes art/history/science museums, public art galleries, science exploration centres and keeping places.

4 Methodology

Overview

The survey instrument used in this study was derived from the survey instrument used by Hayton et al. (1996), with modifications made to allow the survey to be self-completed.

The data were collected over two survey periods using a self-completion, mailed questionnaire survey instrument. Due to the timing of the first survey being just before the Christmas holiday period, the survey periods were just over three months apart.

After the administration of the first survey, questions were added to the instrument to collect data on learning variables as requested from the NCVER review panel. These changes to the survey did not result in any 'loss' of data previously collected.

Questionnaire design

The questionnaire was designed through iterative 'workshops' (live and electronic) between the consortium partners. The variables in the model proposed by McIntyre et al. (1996) formed the basis for the design of the survey instrument. A copy of the original survey employed by Hayton et al. (for administration through telephone interview) was supplied by NCVER.

The consortium partners believed that there were several benefits in remaining as faithful as possible in this proposed study to the methodology adopted by McIntyre et al. (1996), in terms of the data collected (determined by the model of enterprise training) and the analysis. However, practical experience of all of the consortium partners in the field suggested that some of the factors should be modified, and additional (environmental, driver and mediating) factors could be explored within the model framework. These include:

- Aspects of competition, which previous models have treated mostly from the perspective of exposure to global market forces. The consortium's experience suggested that more important was the basis of competition, whether it was based on price (which favours technology investment) or on quality (which favours investment in human resources) of products and services.
- Similarly, concerns about competitive advantage may influence attitudes towards willingness to participate in nationally recognised training programs (for instance adopting training packages or pursuing enterprise specific training options).
- Aspects of industry regulation, where previous models have focussed on effects on the market for products and services. Some of the industries which were to be included in this project were believed to be more concerned with regulation of the processes of production (for example, the chemical and oil industry).

The McIntyre et al. survey instrument was thus modified to incorporate questions that would explore additional factors as indicated. The style of the survey was also changed from an interview to a self-completion questionnaire. Once drafted, the questionnaire underwent exhaustive internal editing, and was then piloted in five organisations. More extensive piloting

was not considered necessary as most of the questions had been previously used and tested by McIntyre et al.

The survey underwent a further revision after the initial round of questionnaires was administered. This revision was prompted by comments from the NCVER review group who requested an additional line of investigation that would explore 'learning' factors.

The survey was submitted to the Statistical Clearing House (SCH) for comment and clearance. The SCH's comments were also incorporated into the final survey instrument. A copy of the final survey used can be found in appendix 5.

Survey administration

Details of the process of survey questionnaire distribution and the sample population are provided in appendix 1. A total of 446 companies was surveyed in two separate mailouts.

Of the 446 companies sent a questionnaire in the first survey, 35 were out of scope because the company had ceased to exist, been acquired or merged, or had changed their address. This reduced the in-scope sample population to 411. Just under 30% (112/27.3%) of in-scope companies completed the survey.

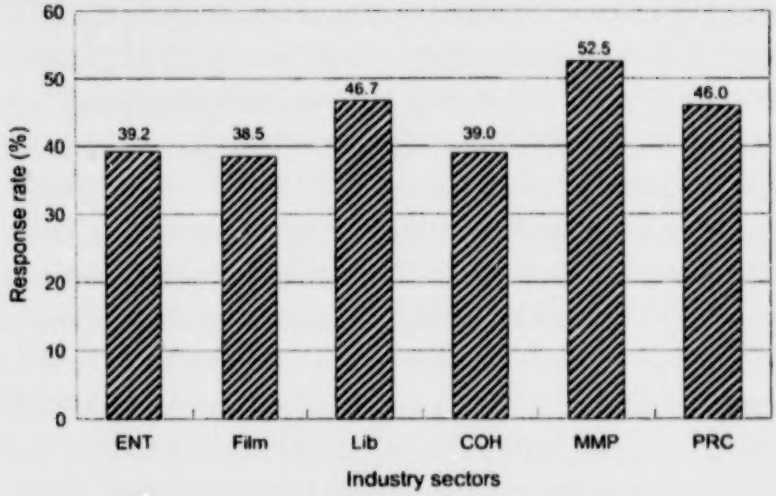
Once the out-of-scope and respondent companies were removed from the sample, the remaining 299 non-respondent companies were re-surveyed with a slightly modified questionnaire (see above). Of these 299 companies, a further 18 were found to be out of scope, reducing the potential respondent group to 281. Of these 281 companies, 61 (21.7%) completed the survey.

The overall response rate for the study, after re-surveying the non-respondents to the first survey and following up all of the non-respondents to both surveys by telephone, was 44%. This response rate varied across industry sectors as shown in table 10 and figure 4.

Table 10: Number of responses by industry sub-sectors

Industry sector	No. surveyed	Out of scope	Industry sub-sector	No. of respondents
Plastics, rubber & cablemaking (PRC)	109	9	Rubber	9
			Cablemaking	3
			Plastics	34
Manufactured mineral products (MMP)	50	10	Clay & ceramics	6
			Glass	5
			Cement	2
			Concrete products	8
Chemical, oil & hydrocarbons (COH)	51	10	Chemical	8
			Oil refining	4
			Hydrocarbons	4
Film, television and multimedia (Film)	30	4	Film & television & multimedia	10
Libraries & museums (Library)	99	9	Museums	13
			Libraries	29
Entertainment (ENT)	107	10	Entertainment	38
Total	**446**	**52**		**173**

Figure 4: Response rate by industry sector



Data analysis

The main method used to analyse this data was log linear modelling. This is a statistical procedure that applies a model to the data in the same general way as a simple or multiple linear regression. In each model there is one dependent variable and one or more independent variables. The model tests the strength of the relationships between the variables and states which of the independent variables has a significant explanatory effect.

Log linear modelling is a suitable procedure where the data are in a categorical form (that is, taking set values of 1,2,3 or 1,2,3,4,5). The log linear model transforms the data into large cross-classified tables and tests for significant effects.

The dependent variables in this analysis, 'indices of training activity', have been produced by aggregating the results of sets of questions and assigning values to ranges of responses. The independent variables, 'factors associated with training activity', were assembled in a similar way.

All statistical analysis was carried out using the statistical packages S-Plus (Mathsoft Inc) and SPIDA (Statlab, Macquarie University).

Indices of training activity—dependent variables

A set of indices of training activity was calculated from various questions in the survey. The indices were generated using information derived from Hayton et al. (1996). All of these indices were calculated in a similar way. The results of sets of questions were combined in one score (usually by awarding 'yes' answers with one point and summing to a total) and then this was reduced to an index of value 1 to 5. The following indices were produced:

- diversity of training
- volume of training
- training reform engagement
- reliance on external training
- formalisation of training
- individualisation
- learning

These variables are described in appendix 2.

Independent variables

A set of factors known to be associated with training activity was identified from various questions in the survey. Again the factors were generated using information from Hayton et al. (1996). These factors were then used as independent variables in log linear models to test their effect on measures of training activity. The following set of factors was produced:

- sector
- size
- Australian ownership
- proportion of workforce in full-time employment
- proportion of workforce in managerial positions
- change
- new products
- level of competition
- industrial relations coverage
- TQM accreditation
- business strategies

These factors are described in appendix 3.

5 Findings

Introduction

This study provided for three separate forms of analysis of the survey data in order to describe and understand the relationship between various enterprise characteristics and training efforts. The three forms were:

- the main characteristics of the respondent population, particularly in relation to those variables identified in the Hayton et al. study as potentially influential on training. The respondent population was small but diverse. Because of the small numbers of respondents in some sub-sectors, analysis and reporting in this chapter has been largely confined to broad industry sectors (as represented by the two industry training advisory boards, MLA and CREATE)
- opinion, collected from survey respondents, on what they believed to be the primary enterprise characteristics driving training effort
- log linear analysis of specific training outcomes (dependent variables) and factors that might influence training outcomes (independent variables)

The findings from each of these forms of analysis are reported separately in this chapter.

Enterprise characteristics

Type and size of workplace

Just over 60% (105) of the responding organisations were part of multi-site company structures. As shown in table 11, a majority of the surveyed companies in both the industry sectors were part of multi-site structures.

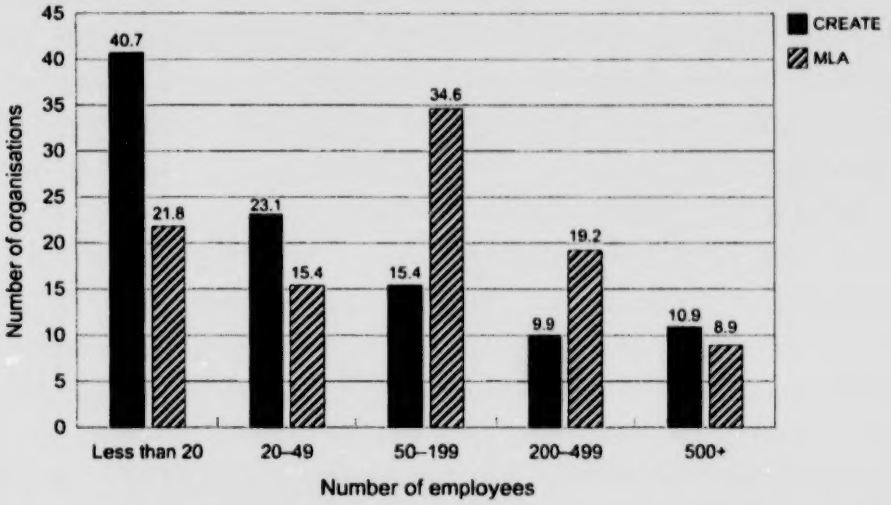
Table 11: Number of respondents per ITAB distributed by type of site and status of site (n=172)

	CREATE		MLA	
Type of site				
Total single-site organisations	38	(41.3%)	29	(36.2%)
Total multi-site organisations	54	(58.7%)	51	(63.8%)
Status of site				
Respondent worksite is organisation head office	37	(71.2%)	18	(36.7%)
Respondent worksite is not organisation head office	15	(28.8%)	31	(63.3%)

Of the 105 multi-site organisations, 101 answered the question of whether their worksite was the head office or not. While a similar proportion of both MLA and CREATE industry sector respondents are nestled within multi-site structures, the proportion of the respondents who are the head office differs significantly. The low proportion of MLA industry sector respondents whose worksite is the head office (36.7% versus 71.2% for CREATE industry sector organisations) possibly reflects higher levels of foreign ownership in the MLA industries.

On the characteristic of organisation size (as measured by number of employees), the industry sectors also differ. MLA industry sector companies tend to be larger, just over half (63%) of the MLA industry sector respondent organisations being classified as 'medium' or 'large' (over 50 employees). This compares with the CREATE industry sector, where only 36% were classified as 'medium' or 'large'.

Figure 5: Proportion (%) of organisations in different size classifications as per ITAB industry sector (n=169)



The sample population is significantly over-represented by larger enterprises. A simple comparison of the sample population with the total enterprise population in Australia in terms of proportional distribution of enterprise size (as measured by number of employees) is shown below:

Table 12: Comparison of sample population with total enterprise population

	Sample population (%)	Total enterprise population (%)
1–19 employees in the business (small)	31.9	93.3
20–99 employees in the business (medium)	48.8	5.6
100 or more employees in the business (large)	24.3	1.1

However, when compared with the sample population of Hayton et al. (1996), the differences are less significant. The proportion of small, medium and large-sized enterprises in this study (shown above) compares to proportions in the Hayton et al. study sample of 40.6%, 29.8% and 29.6% respectively.

Permanency of the workforce

The differences between the two industry sectors in relation to permanency of the workforce are marked, as shown in tables 13 and 14. Permanent full-time work in the CREATE industry sectors, while accounting for the majority of workers, nevertheless represents a much lower proportion of the workforce than for the MLA industry sector.

Table 13: Distribution of CREATE companies by size and permanency of the workforce

Size of company (no. of employees)	Average % of workforce (CREATE)			
	Full-time	Part-time	Contract	Casual
Micro and small (less than 20)	42.8	13.4	17.6	26.2
Medium (20–199)	52.6	19.5	12.9	24.7
Large (greater than 200)	67.2	13.9	6.1	14.0

The entertainment industry is known for workplace opportunities for casual and part-time workers. On the other hand, the MLA industries have been for some time recognised as places of stable employment with very little turnover. What recruitment is necessary draws on the 'mature and married' pool of applicants (Ridoutt & Willett 1994).

Table 14: Distribution of MLA companies by size and permanency of the workforce

Size of company (no. of employees)	Average % of workforce (MLA)			
	Full-time	Part-time	Contract	Casual
Micro and small (less than 20)	72.0	7.7	3.6	16.6
Medium (20–199)	81.0	7.2	2.1	10.1
Large (greater than 200)	88.6	1.0	4.0	6.3

The difference between the two industry sectors is probably understated, since in the entertainment industry volunteer labour contributes significantly, especially in smaller, regional enterprises.[3] In this study, volunteer labour was not counted.

The use of contract labour is most pronounced within the CREATE industry sector, and within both sectors in smaller enterprises. High levels of contract labour enhance flexibility of the workforce, but arguably make it less attractive for the employer/enterprise to invest in training.

Occupational structure

CREATE industry sector worksites have significantly higher proportions of professional and managerial-level workers, over twice the proportion at MLA industry sector sites. Professional categories include technical people (for example, directors, costume and set designers in the CREATE sector and engineers and chemists in the MLA sector), marketing people and managers (human resources, production managers etc.).

Table 15: Proportion (%) of persons employed at the average worksite distributed by industry sector and occupational category

Occupational category	Proportion of employees (%)	
	CREATE	MLA
Management and professional	40.1	17.6
Technical and trades	14.8	14.2
Production	12.3	44.0
Clerical and sales	20.2	10.9
Labourers/general hands	10.2	10.6

3 Statistics collected by ABS (1999) suggest unpaid labour outweighs paid labour by almost four to one in terms of persons involved in the industry.

On the other hand, almost half of the workers at MLA industry sector sites are operators, an almost four times greater proportion than at CREATE industry sector sites. A possible explanation for this difference is that the MLA industry sector relies on its employed production staff to produce the product, whereas in the CREATE industry sector it is frequently the performers who are 'making the product', and they are not counted as part of the organisation. Other than these two occupational categories, the proportion of workers in other occupational categories appears similar.

Work reorganisation

Professional and management categories of workers had experienced the most change in their job roles in the last three years. In almost all enterprises/worksites (94%), workers in these occupational categories had experienced at least 'a little' change in their job role, and at almost half of the worksites (47%) workers had experienced 'a lot' of change. Nearly all other categories of worker had experienced high levels of change, although the proportion of worksites affected and the level of change were significantly less. The exception to the general trend is the labourer worker category, only a minority of worksites reporting change (even a little) in jobs for this category.

Table 16: Number and proportion (%) of workers whose job role is changing distributed by amount of change and occupational category (n=172)

Staff categories	Level of change in job role (no. and percentage of enterprises)			
	'A lot'		'A little'	
Management and professional	81	(47.0%)	80	(46.5%)
Technical and trades	29	(16.8%)	82	(47.7%)
Production	31	(18.0%)	62	(36.0%)
Clerical and sales	47	(27.3%)	88	(51.2%)
Labourers/general hands	10	(5.8%)	48	(27.9%)

Compared with the findings of Hayton et al. (1996, p.33), the extent and level of change in jobs appears to be much higher in this study. Whether this is a product of the industry sectors under study in this project, or a consequence of a gathering pace to organisational change in general, is difficult to gauge.

Structural changes

Job changes are generally accompanied, or perhaps prompted, by broader structural changes affecting the enterprise. Very similar types and levels of change were reported by both MLA and CREATE industry sectors (see table 17). And, in a remarkably similar pattern to the results obtained by Hayton et al. (1996), the three main areas of structural change found were:

- ✧ internal staff communications
- ✧ team processes
- ✧ downsizing (reduced staff numbers)

Staff communications and team processes are the main areas of change in most workplaces, followed by decentralisation issues and downsizing (table 17). Proportionately, smaller worksites seem to be undergoing less change than larger enterprises (table 18).

Table 17: Proportion of worksites undergoing structural change distributed by type of change and industry sector

Type of change	Number & proportion (%) of companies			
	MLA (n=92)		CREATE (n=81)	
Downsizing (reduction in overall staff numbers)	47	(51.1)	45	(55.6)
Reducing number of management positions	36	(39.1)	34	(42.0)
Introducing profit centres	20	(21.7)	26	(32.1)
Decentralisation of decision-making	33	(35.9)	35	(43.2)
Introduction of team processes	50	(54.3)	55	(67.9)
More emphasis on internal staff communications	62	(67.4)	62	(76.5)
Purchase of other business areas	25	(27.2)	15	(18.5)
Diversified into new business areas (n=61)	12	(19.7)	11	(18.0)
Take-over by another company	12	(13.0)	19	(23.5)
Other major changes	11	(12.0)	30	(37.0)

Table 18: Proportion of worksites undergoing structural change distributed by type of change and worksite size (as per number of employees)

Type of structural change	Size of worksite					
	Small (n = 54)		Medium (n = 74)		Large (n = 41)	
Downsizing (reduction in overall staff numbers)	24	(44.4%)	37	(50.0%)	30	(73.2%)
Reducing number of management positions	12	(22.2%)	31	(41.9%)	25	(33.8%)
Introducing profit centres	11	(20.4%)	23	(31.1%)	12	(29.3%)
Decentralisation of decision-making	18	(33.3%)	28	(37.8%)	20	(48.8%)
Introduction of team processes	29	(53.7%)	44	(59.5%)	30	(73.2%)
More emphasis on internal staff communications	35	(64.8%)	55	(74.3%)	32	(78%)
Purchase of other business areas	4	(7.4%)	27	(36.5%)	8	(19.5%)
Diversified into new business areas (n=61)	5	(9.3%)	11	(14.9%)	5	(12.2%)
Take-over by another company	9	(16.7%)	17	(23.0%)	4	(9.8%)

Competition and orientation to export markets

The level of competition for products and services was reported to have increased 'a lot' for 53.5% (92) of the total worksites and 'a little' for a further 30.8% (53) of respondents. This was a very similar situation to that reported by Hayton et al. (1996), indicating that competition pressures were still a major consideration for Australian enterprises. Only 14% of worksites reported no change in competition and an even smaller percentage (1.2%) reported a decrease.

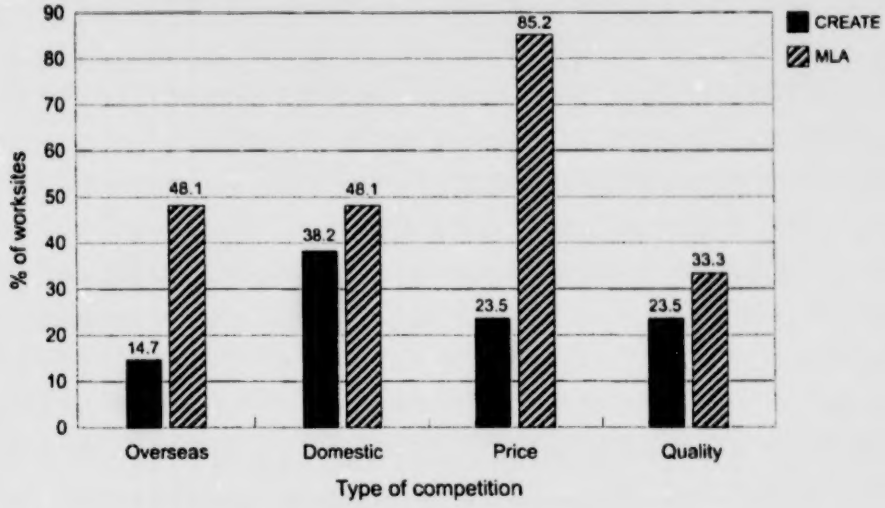
The difference between industry sectors, in terms of the impact felt from competition forces, is marked (see table 19). Almost 20% more worksites in the MLA industry sector than in the CREATE industry sector felt competition had increased 'a lot'.

The differences between industry sectors reflect in part the greater exposure of MLA industry enterprises to overseas competition and even more to the cut-throat nature of competition on price (see figure 6). Surprisingly, given the nature of the entertainment industry, and the much-claimed role of Australia within Asia as a value-added manufacturer, competition on the basis of quality was not a strongly felt factor.

Table 19: Level of change in competition by ITAB

Level of change	Number of worksites (n=172)			
	CREATE (n=90)		MLA (n=81)	
Increased a lot	41	(45.6%)	51	(62.9%)
Increased a little	33	(36.7%)	20	(24.7%)
Stayed the same	16	(17.8%)	8	(9.9%)
Decreased	0		2	(2.5%)

Figure 6: Proportion of workplaces experiencing 'high' or 'very high' levels of competition by source of competition



Reinforcing the impression provided in figure 6, 78% of MLA industry sector workplaces indicated they are selling at least some of their products and services in export markets. This compares with only 37% of CREATE industry sectors selling in export markets, and then only a small proportion (less than 25%) of the total value of their products.

Over half (60%) of the respondent worksites experienced a change in the competition or the market for their products/services in the preceding year. The major effects of the changes were to increase costs and to require more knowledge of staff, and to a lesser extent to increase the level of training supplied. In a small number of cases a decrease in costs and in level of training supplied was reported (see table 20).

Table 20: Proportion of worksites (%) affected by change in competition or market by level and direction of change

Effects of the change in competition or market on the worksite	Level and direction of change			
	Increased a lot (%)	Increased a little (%)	Decreased a little (%)	Decreased a lot (%)
Cost of supplying products and services	19.0	36.5	6.3	0.0
Knowledge required by staff	30.2	28.6	0.0	0.0
Level of training supplied	12.7	28.6	3.2	1.6

Organisational planning

In the literature review (see chapter 2) learning organisations were dissected to identify key elements in their character. A primary element in learning organisations was deemed to be a compelling vision/mission, developed and shared by all members of the enterprise.

While not able to explore the quality of respondent worksite/enterprise visions, the survey was able to establish that 80.8% of respondent organisations have a business plan. Of those with a plan, 71.2% have a section in the business plan on skills development and just over half (58.7%) have the business plan available to all employees. Most (71.4%) have a process for ongoing review. A similar number of respondent organisations have a vision (77.8%) or mission statement. Few of these statements have a section on skills development (28.6% and 29.4% respectively), but most organisations with a vision or mission statement make them readily available to employees (89.8% and 92.2% respectively).

In addition to the normal corporate planning tools, 68.9% of the respondent organisations currently have a document that outlines the behaviour (values) that they want fostered and encouraged within the organisation. Large worksites (over 200 employees) were over-represented in the group which had these documents.

Quality commitment

There is a strong commitment within the respondent worksite population to quality: 47.1% of worksites being accredited or in the process of being accredited under standards of the International Standards Organisation/Standards Australia (ISO/AS 9000 series).

This is not a uniform commitment however. MLA industry sector worksites are almost four-and-a-half times more likely to be accredited than CREATE industry sector worksites. Less than 20% of CREATE industry sector companies have either achieved standards accreditation or are actively seeking accreditation. This, at least in part, reflects the history of 'quality accreditation' starting with the manufacturing industry. There seems little to motivate CREATE industry sector companies to pursue quality standards accreditation. Companies with more than 50 employees are also more likely to be accredited. Just on 40% of all companies with accreditation have more than 500 employees; 44.2% have between 50 and 499; and only 15.7% have under 50 employees.

A slight majority (55.5%) of worksites have adopted, or are in the process of adopting, a total quality management (TQM) or other similar management program. Again, the resolve and involvement of MLA industry sector worksites in TQM-type programs is almost twice that of the entertainment sector industry. Nevertheless, the entertainment industry's interest in such programs is much higher than that shown for institutional approaches based on meeting standards.

Many companies in the study admitted to supporting quality management approaches with capital investment, for example:

- 66.3% of worksites have had a major investment at the worksite in the last three years in areas like technology or plant, equipment or facilities.
- 84.3% have introduced new products or services in the last three years.

Regulatory impact

Government regulation and/or licensing requirements have a significant impact on overall operations. Just over 40% (40.1%) believe that government regulation or licensing affect the market for their products or services. Of these, over a third (34.5%) were very large organisations with more than 500 employees; 40.6% had between 50–499 employees.

Employment arrangements

Most of the respondent organisations (67%) use basic salary or wages as a reward system for staff. Of the 33% that use a reward system other than salary:

- 70% have a financial and structured reward.
- 55% have an underlying system that is known to all staff.
- 45% use flexible rewards.

The majority (60%) of enterprises offering rewards other than salaries and wages are large (that is greater than 200 employees). Also, MLA industry sector enterprises were more likely to have established alternative reward systems than CREATE industry sector enterprises (41% versus 27%).

The most common mechanism governing working conditions in the surveyed organisations is awards. This is especially so for CREATE industry sector enterprises, who are 50% more likely to have employees' conditions determined by an award than MLA industry sector enterprises. On the other hand, over half of the MLA enterprises have employees party to registered collective agreements (for example, certified enterprise agreements) compared with only 34% of CREATE industry sector enterprises. Individual agreements are also common (more so in the CREATE industry sector), but generally on an informal basis through a letter of agreement or even a verbal agreement rather than through registration as an Australian Workplace Agreement.

Table 21: Prevalence of different arrangements governing conditions of employment in the respondent population (% of total population)

Type of work agreement arrangement to govern work conditions	Prevalence of use of arrangement (%)
Awards	51.6
Registered collective agreements	41.7
Registered individual agreements	11.7
Informal individual agreements	43.3

Where more formal arrangements are in place governing the conditions of employment, there is often likely to be a clause relating to the provision of training. Just on two-thirds of workplaces have at least some of their workers with conditions of employment that include training provisions.

Table 22: Number of worksites whose workforce has training provisions included in their conditions of employment by the proportion of workers covered (n=173)

Proportion (%) of employees at the worksite whose conditions of employment cover training provisions	Number and percentage of respondent organisations	
100%	34	(19.7%)
76–99%	19	(10.9%)
51–75%	22	(12.7%)
26–50%	1	(0.6%)
0–25%	23	(13.3%)
Don't know	23	(13.3%)
No provision	51	(29.5%)

Character and extent of training

Training effort varies considerably between the worksites surveyed, in volume, formality and content. For instance, only 9.8% of surveyed organisations have sufficiently structured their

training arrangements to be accredited as registered training organisations (RTOs) with their relevant State training authority. This is nevertheless a high proportion of organisations. National Training Information System data obtained for this study (September 2000) identified only 422 enterprise-based RTOs in Australia. If the total number of enterprises in Australia is approximately 1.1million, then the prevalence of RTOs in the total population of Australian enterprises is less than 0.4%. The relationship between training effort and a range of organisational characteristics (many described in previous sections) will be explored later in this report. Here, a brief account of the main aspects of training effort is provided.

Training effort (volume)

Few (< 2%) of the surveyed worksites had not involved at least some of their employees in training in the most recent calendar year (1999). Almost half (47%) of the worksites had involved 50% or less of their employees in some form of training, which meant that just on half had trained more than 50% of the employees. The findings on extent of training effort (employees involved in training) are remarkably consistent with those reported by Hayton et al. (1996, p.39).

Table 23: Extent of training in surveyed worksites by proportion of employees involved in training in 1999 (n=173)

Proportion of employees involved in training	Number and proportion (%) of respondent organisations
None at all	3 (1.7%)
Up to one-quarter (1–25%)	50 (28.9%)
Up to one-half (26–50%)	31 (17.9%)
Up to three-quarters (51–75%)	27 (15.6%)
Most of the worksite's staff (76–99%)	54 (31.2%)
Absolutely everyone (100%)	4 (2.3%)
Don't know	4 (2.3%)

The extent of training in both CREATE and MLA industry sectors is very similar. Proportionately there were slightly more CREATE industry worksites with between a quarter and a half of their employees involved in training, while MLA industry sector worksites were proportionately more represented at the lower level of involvement (1–25%).

There were some differences between worksite size in the level of involvement of employees in training. However, this was not as pronounced as the differences found by Hayton et al. (1996). For instance, looking at the proportion of worksites with more than 50% of their workers involved in training in 1999, the following differences were found:

Table 24: Size of worksite and employees in training

Size of worksite	Proportion of employees involved in training (%)
Small	44.4
Medium	51.5
Large	55.0

A second measure of training volume is the percentage of payroll spent on training in the same time period (1999 calendar year). Training expenditure by the surveyed enterprises ranged from nothing to more than 10% of the payroll (see table 25).

Table 25: Extent of training in surveyed worksites by percentage of payroll spent on training in 1999 (n=173)

Percentage of payroll spent on training	Number and percentage of respondent organisations	
No funding of training in 1999	1	(0.6%)
Less than 1% of payroll	36	(20.8%)
At least 1% but less than 2% of payroll	46	(26.6%)
At least 2% but less than 5% of payroll	40	(23.1%)
At least 5% but less than more than 10% of payroll	17	(9.8%)
More than 10% of payroll	3	(1.7%)
Don't know	30	(17.0%)

Similar to the proportion of workers involved in training, the expenditure on training increases with size. Over half (65%) of small enterprises spent less than 2% of their payroll in 1999, whereas only 41% of medium and larger companies spent less than 2%. An interesting feature of the size analysis was that an unexplainably high proportion of medium-sized enterprises (28%) did not know what their expenditure on training had been, compared with small and large enterprises (7% and 10% respectively).

Types of training provided by worksites

As noted above in the section on volume of training, few enterprises (less than 2%) stated that they do not invest at all in training. However, the types of training in which they invest can vary.

Analysis of ABS data over a number of survey years indicates that informal training (which was defined in the earlier chapter) is the preferred investment of most enterprises. This was confirmed as the case also with the enterprises surveyed in this project. Close to all of the surveyed worksites (99% after 'don't know' respondents removed) were engaged in informal on-the-job training, which was most likely to be unstructured. Other prominent types of training identified (see table 26) were induction training (likely to sponsor structured learning), regular staff/management/team meetings (with uncertain learning outcomes), and in-house development courses. The latter, while designated as an informal type of learning, could easily be structured and may even be formal (insofar as the training/learning is contributing towards the attainment of a qualification of some sort).

Table 26: Proportion of worksites surveyed offering training by types of training provided

Types of training provided	Proportion (%) of worksites surveyed
Induction training	85.1
On-the-job training	98.8
Mentoring	60.5
Structured job rotation	42.3
In-house staff development courses	66.9
Regular staff/management meetings	82.5
Regular team meetings	77.8
Opportunities to attend other worksites	61.7
A system for evaluating and learning from unusual events, incidents, problems etc.	55.9

The types of informal training employed in the CREATE and MLA industry sectors are very similar. CREATE industry sector enterprises use meetings more than do the MLA sector

enterprises. On the other hand, structured job rotation and systems for extracting learning from incidents are more prevalent types of training/learning in the MLA manufacturing enterprises.

Most of the worksites surveyed (90%) provide some form of formal training opportunity to at least one of their employees. The small proportion who do not offer any formal training opportunities are all small workplaces.

The most common form of formal training is through external accredited courses, which generally means enrolment in a TAFE or university course. Well over half of the worksites surveyed (63%) offered workplace training opportunities to students (school, TAFE and university) in 1999. The prevalence of other types of formal training is detailed in table 27.

Table 27: Number and proportion (%) of organisations providing formal training opportunities by types of training provided (n=173)

Types of training provided	Frequency and proportion	
Apprentices (traditional, indentured apprentices)	47	(27.2%)
'New apprentices' (engaged under the 'new apprenticeship' scheme)	19	(11.0%)
Trainees (engaged under traineeship arrangements)	77	(44.5%)
Employees currently undertaking other accredited courses	114	(65.9%)
Employees in labour market programs such as Jobskill	32	(18.5%)
Students on workplace programs from schools, TAFE colleges or universities	109	(63.0%)

Traditional apprenticeships are ten times more likely to be pursued in larger enterprises than in small enterprises. The comparatively newer traineeships are more common in smaller enterprises (38%), although not as prevalent as in medium (55%) and larger (58%) enterprises. The gap between small and large enterprises in the prevalence of different types of training adopted narrows even further if reviewing undertaking of accredited courses and participation in labour market programs, although the number (or proportion) of workers involved in such training activities is not taken into account.

In relation to the industry sector, CREATE sector enterprises are three times less likely to train apprentices, but slightly more likely to employ and train through a traineeship scheme. Surprisingly, given previous reports on the low level of formal training in MLA industry sector enterprises (see Dutneall, Hummel & Ridoutt 1998), almost half (46%) of the surveyed workplaces in that sector reported having at least one apprentice in 1999. This difference may be explained by the broader range of this study which included trades apprentices, whereas the previous work by Dutneall et al. concentrated mainly on the training of production personnel.

Most of the worksites (80%) contribute to at least some employees' formal training through either paying for course fees and/or allowing paid time off to attend courses. Nearly 60% of the enterprises not providing any support are small businesses. A higher proportion of enterprises contribute to attendance at TAFE courses (68%) than to any other form of external training, although other forms of external course attendance are well supported (see figure 7).

A range of training providers supply training to the surveyed workplaces outside the formal institutions. By definition, this type of training is probably informal, but on the whole it is likely to be structured, off-the-job, and could lead to a qualification (especially given the current pathways to qualifications opened by training packages in both the CREATE and MLA industries). The most common form of training offered by workplaces is short courses, seminars etc. (97%). Training by equipment suppliers and consultants is also very prevalent (see table 28).

Figure 7: Proportion (%) of surveyed worksites making a contribution to education of workers by type of course (provider) (n=173)

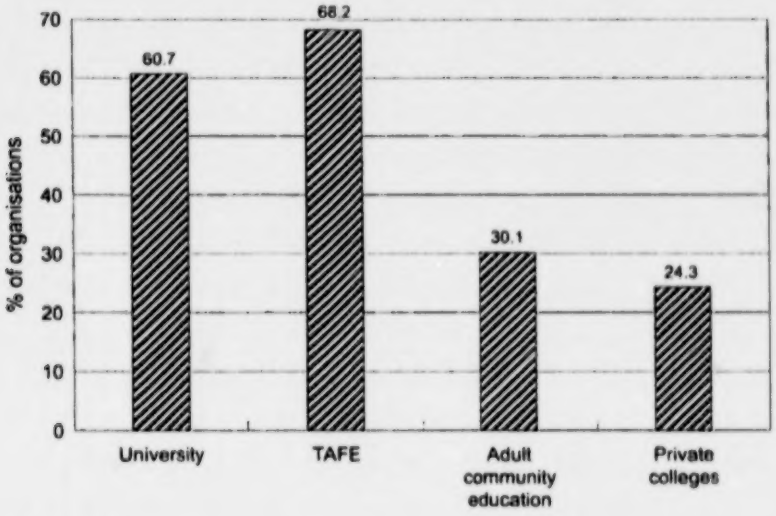


Table 28: Proportion (%) of workplaces organising training from external non-institutional sources by types of training supplier

Types of training providers	Proportion (%) of workplaces
Training by equipment suppliers	69.9
Training by consultants	69.9
Training by industry associations	57.2
Sending staff to short courses, seminars, conferences, promotional functions	97.1

Small business use of equipment suppliers, consultants and industry associations is considerably less than their use by medium and especially large enterprises. For instance, while approximately half (53%) of small enterprises organise training with equipment suppliers, 92% of larger companies have organised training with equipment suppliers. Little differences in usage patterns are evident between industry sectors. Apart from a slightly higher prevalence of MLA industry sector enterprises using industry associations to provide training, the pattern of use of non-institutional external training supplier is remarkably similar.

Training resources

It is often considered a prerequisite for effective training effort in an enterprise that adequate human resource management resources be available. Of the surveyed worksites in this study, 115 or 66.4% had some form of dedicated training or human resource management infrastructure. This could be a worksite trainer/instructor (46%), a specialist training section (15%), a training manager (30%) or a more generic human resource officer (38%). To support these resources, enterprises have varying levels of training infrastructure (see table 29).

Table 29: Proportion (%) of surveyed worksites with specified training support resources and infrastructure

Training support resources and infrastructure	Proportion of worksites with resource (%)
A human resource officer who is responsible for developing a learning environment	37.6
A training manager	28.9
A specialist training section	15.0
Worksite trainers/instructors	46.2
A written training plan	35.8
Specialist training facilities (e.g. a training room)	41.6
Line managers who are expected to create a learning environment as part of their role	74.2

For instance, of those enterprises with training/human resource personnel, half (50%) have a written training plan (this actually accounts for 91% of those with a training plan) and just over half (53%) have specialist training facilities (again this accounts for 85% of enterprises with training facilities). Most (65%) of these same enterprises (with training/human resource personnel) expect their line managers to create a learning environment. On this last issue, one might expect most of those worksites with no trainer/human resource personnel to pursue training effort through their line managers; however, only 35% of these enterprises had such expectations of their line managers.

Size is an important determinant of a worksite's level of resources and infrastructure. Large worksites (>100 employees) are twice as likely to have some form of infrastructure than small enterprises (<20 employers). Significantly more MLA industry sector enterprises have some form of training infrastructure than CREATE sector enterprises (77% and 58% of enterprises respectively). This is consistent with the generally larger size of enterprise in the MLA sector.

Training practice sophistication

The strategies that enterprises adopt for identifying training needs and matching training to those needs have been recognised as a way of assessing the level of sophistication of the training practice (Kane, Abraham & Crawford 1994).

A number of strategy options was offered to the surveyed worksites. From these they were asked to choose the actions they had adopted during 1999 to structure learning need identification and satisfaction (question E7 in the questionnaire, see appendix 5). Note that this same question was employed by Hayton et al. in a very different way—to create an index of training to explore the level of individual influence on training decisions. It is the thesis of researchers conducting this study that employers' relinquishing control over training need identification is not the ideal training approach. Rather, decision-making should be shared, and reflect the needs not just of the worker but also of the job to be performed.

All but 3% of the worksites surveyed had adopted at least one strategy, with the results of their responses shown in table 30. Strategies in table 30 are presented in order of increasing structure (from 1 to 5). No judgement is made as to the relative efficacy of these strategies.

The results in table 30 reflect similar proportions to those found by Hayton et al. (1996). Most enterprises surveyed were adopting medium levels of strategy structure. Only 36% of enterprises were assessing workers' learning needs against competencies in a structured and formal way (the most formal option, arguably that required to satisfy requirements of qualifications frameworks in training packages). As with other issues, larger-sized enterprises are more likely to adopt this more structured option. Interestingly also, significantly more enterprises in the MLA industry sectors than the CREATE industry sectors have adopted the more formal strategy (47% and 28% respectively).

Table 30: Proportion of worksites adopting specified strategies for matching training opportunities with worker learning needs (n=173)

Strategies	No. & proportion of enterprises adopting strategy (%)	
1. A list of training opportunities is circulated and employees nominate the training they want.	59	(34.1)
2. A list of training opportunities is circulated and supervisors or managers nominate the employees who should attend.	77	(44.5)
3. Employees identify their own learning needs, and appropriate training, and negotiate this with their supervisor.	116	(67.1)
4. Supervisors or managers assess each employee in a fairly informal way concerning what learning is needed, and organise training as the opportunities arise.	113	(65.3)
5. Each employee is assessed in a formal and structured way against a list of competencies, and a competency development plan for that employee is prepared.	62	(35.8)

Another measure of an enterprise's level of sophistication in training delivery is whether training/learning is evaluated. Just under half (49%) of the worksites surveyed claimed they formally evaluate any training delivered. A significant proportion of these worksites (83%), are medium or large enterprises. Just as important a pointer is the use of competencies as a basis for training. Over one-third (38%) of enterprises claims to use either national competency standards (31%) or enterprise standards (19%) as a basis for training, a proportion which is higher than that found previously (for example, Hayton et al. 1996). Even so, the high proportion of professed use of competency standards (especially national standards) seems to fly in the face of available anecdotal evidence (see Dutneall, Hummel & Ridoutt 1998). It is possible that organisations are using nationally endorsed competency standards as a basis for their training, but not pursuing the awarding of formal qualifications for the completion of this training. Of enterprises using national competency standards, 62% have more than 200 employees, while of those using enterprise standards, 45% had more than 500 employees.

Respondents' views on what influences their training decisions

Surveyed worksites were asked to provide a view on the importance of different factors in driving learning in their enterprises. A number of factors were identified by most worksites as at least somewhat important. These are detailed in table 31.

Table 31: Proportion of worksites identifying various factors as important in driving learning and competency development (n=173)

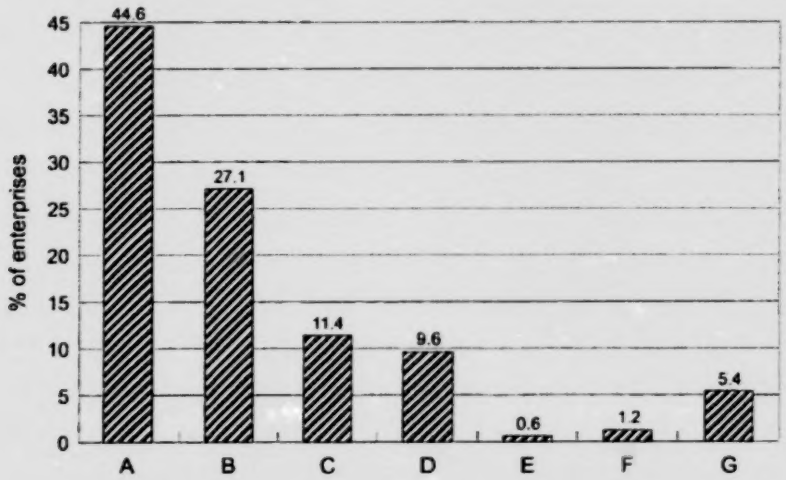
Factors driving training	No. & percentage of worksites nominating factor as 'somewhat' important		No. & percentage of worksites nominating factor as 'very' important	
Concern for quality	44	(25.4)	122	(70.5)
New or changed technology	64	(36.9)	100	(57.8)
A change in work organisation including way in which jobs are defined	78	(45.1)	57	(32.9)
Government licensing and regulation, including occupational health and safety regulation	72	(41.6)	81	(46.8)
Deregulation of markets	46	(26.6)	5	(2.9)
Industrial relations developments	85	(49.1)	17	(9.8)
Other factor	5	(2.9)	14	(8.1)

Concerns for quality were identified by a very high proportion of surveyed enterprises as a powerful driver of learning, as was new or changed technology. These have become universally accepted factors of importance (see literature review), although as will be seen later in this chapter, they can be challenged. Changes, either in technology or in the organisation of work, are also perceived by a majority of enterprises as important influences.

When asked what the single most important factor might be, quality again surfaced as the primary consideration (see figure 8). Interestingly however, there appears to be a difference in the perceptions adopted by different-sized enterprises. Smaller enterprises believe learning/training actions to be almost exclusively driven by quality concerns, and to a lesser extent by technological change. On the other hand, larger enterprises, while acknowledging quality concerns, place change (technological and organisational) and government regulation on an almost equal footing.

Moreover, there are some marked differences between industry sectors. MLA industry sector worksites were more likely to identify quality concerns as a driving factor, while, somewhat surprisingly, three times more worksites in the CREATE industry sector identified technological change as a driving factor for training activity than did the MLA industry sector worksites. Government regulations were identified as an important factor by 17% of MLA industry sector worksites, but few CREATE industry sector worksites considered this a significant factor.

Figure 8: Proportion of enterprises identifying different factors as the single most important in driving training (n=166)



Note:
Factors driving training

- A= concern for quality
- B= new or changed technology
- C= a change in work organisation including ways in which jobs are defined
- D= government licensing and deregulation, including occupational health and safety regulations
- E= deregulation of markets
- F= industrial relations developments
- G= other factors

Findings of the log linear analysis

Log linear analysis was undertaken of all seven indices of training effort in relation to a standard set of 12 independent variables. The indices (dependent variables) are described in appendix 2, and all the independent variables (factors that might influence training effort), are described in appendix 3.

The significant relationship established through the log linear analysis is outlined briefly in the following sections of this chapter. Further details of the analysis undertaken and the nature of the relationship are provided in appendix 4.

Diversity of training

The index attempts to measure the extent to which an enterprise/worksite employs the full range of formal and informal training activity options. Hayton et al. (1996), who created this same index for their analysis, described the index as a way of understanding how 'comprehensive' training is as distinct from sheer volume.

The findings in this study relate diversity of training to a mixture of 'operational'-type variables (change, $p=0.002$, and the introduction of new products, $p<0.0005$) and strategic or structural variables (the proportion of workers in full-time positions, $p=0.003$, and covered by formal industrial arrangements, $p=0.019$). The variables of worksite size and industry sector, significant influencing factors in the Hayton et al. study, were not found to be significantly related to diversity of training in this project. However, size in particular, is known to be related to both the structural variables of workforce permanence and award and agreement coverage.

Volume of training

This index measures, irrespective of type and nature of training, the sheer extent of training, that is, how much training is actually being undertaken.

Only three factors were significantly related to volume of training: the proportion of workforce who are managerial or professional ($p=0.05$), change in the workplace ($p=0.01$), and new products introduced ($p=0.005$). All the relationships were positive. Hayton et al. (1996) found five factors associated with volume of training, all but one of which are different from the findings in this study. Change or level of worksite reorganisation is the common variable. Size of the enterprise and industry sector are again notable differences, while the strategic value of training (represented by training's integration in the business plan) and commitment to quality were significant variables in the Hayton et al. findings.

Training reform engagement

The index measures the extent to which worksite practices reflect 'training reform agenda' initiatives, such as the adoption of competency-based training and accreditation as a registered training organisation. The current questionnaire could have included a question about training package purchase or use (these were not yet in fashion at the time of the Hayton et al. study data collection), but it was decided to retain close correspondence (on this issue at least) with the original study. A study by Dutneall, Hummel and Ridoutt (1998) found that high levels of training reform engagement indicate very sophisticated enterprises in respect to their training effort.

Six factors were found to be significantly related to the training reform agenda index. These are: industry sector ($p=0.004$), size of enterprise ($p=0.006$), Australian ownership ($p<0.0005$), the proportion of workforce who are managerial or professional ($p=0.05$), change in the workplace ($p=0.002$), and the degree to which the organisation has created a learning culture ($p = 0.02$). There was more agreement on this variable between the current study and the earlier Hayton et al. study. The three key independent variables, size of worksite, industry sector and change, are all common. Australian ownership was not included in the Hayton et al. modelling (at least not the 'best' model). The level of professionalisation of the workforce is, although less strongly related to the dependent variable, a significant departure from the Hayton et al. study. Its effect, one would expect, would be almost 'opposite' of that of the variable they found to be influential, the level of award and agreement coverage. This latter variable they argued would be influential

on training reform engagement since training reform was so closely linked with award re-structuring processes. It might be that in the intervening years the nexus between the training reform agenda and industrial relations reform has weakened, at least in the industries included in this study.

Reliance on external training

Hayton et al. (1996) described this variable as:

> ... *a complex measure of the extent to which training is conducted off-site through other sources besides the enterprise itself.* (Hayton et al. 1996, p.48)

The findings indicated that larger establishments were associated with lower levels of external training ($p=0.001$). This makes sense since larger establishments are more likely to have the in-house resources to support structured training efforts. However, it is the opposite finding of that of Hayton et al. whose results found a positive relationship between size of worksite and reliance on external training. Presumably they would have argued the logic of larger worksites being in a better position to create and maintain relationships with external training providers, especially institutional providers like TAFE. Change in the workplace is again a common influencing factor ($p<0.0005$), while the introduction of new products is a variable found to have an effect only in this study ($p=0.005$). Both studies found only a few 'structural' variables with a significant effect, award and agreement coverage 'professionalisation' of the workforce in the case of the early study, permanence of the workforce in the case of the current study ($p=0.03$). Hayton et al. offered the view that training externalisation was most likely to be associated with apprenticeship training, and that those industries with a strong tradition of trade training would have high levels of externalised training activity. There were no findings in this study to support that view, although it is fair to say that neither the CREATE nor MLA industry sectors have a tradition of trade training.

Formalisation of training

The constructed index measures the degree to which training is formal and regulated. Non-credit short courses conducted off site (even in institutions) are not included as formal training, for instance many courses at ACE and private provider colleges.

A number of factors was found to be significantly related to training formalisation, including industry sector ($p<0.0005$), size of enterprise ($p=0.03$), Australian ownership ($p=0.01$), workforce permanence ($p=0.001$), change ($p=0.001$), proportion of workforce covered by awards and agreements ($p=0.05$), and quality accreditation ($p=0.005$). In the case of the industry sector, the chemical and oil, manufactured mineral products and film industry sectors were associated with a negative effect on formalisation of training, while the entertainment, libraries and plastics, rubber and cablemaking industry sub-sectors were all associated with a positive effect. This is the same pattern as for the training reform engagement variable. It is not hard to accept that training reform engagement and training formalisation should be associated, although attempting to explain the pattern itself is difficult and may be the result of a statistical artifact.

Larger establishments were associated with lower levels of formalisation of training, and in the case of ownership, Australian-owned enterprises were associated with higher levels of formalisation of training. These latter findings are consistent with the earlier relationships established with training reform engagement. What is not consistent is the effect of the two independent variables—proportion of workforce covered by awards/agreements and quality commitment, both of which had a positive effect. In some respects the presence of the first of these two variables is less unexpected.

All of the variables identified by Hayton et al. as having an effect on training formalisation have also been identified in this study. Hayton et al. made particular mention of workplace change, which they believed to be a significant driver of the level of formalisation of training,

hypothesising that the more comprehensive the change at a workplace, the more likely there will be in place structured on-site training arrangements.

Individualisation of training

The index of individualisation is a simple measure of the influence of the individual worker over training decisions. In strongly individualised training situations, the worker identifies training needs him/herself and initiates training opportunities.
The analysis found significant relationships between individualisation and industry sector ($p=0.013$), workforce permanency ($p=0.03$), and change in the workplace ($p=0.002$). There is little correlation between the findings in this study and those of Hayton et al. The latter study identified several other variables with an effect on individualisation of training: professionalisation of the workforce, size of worksite, and technology or product innovation (this was marginally associated in the current study, $p=0.08$, negative trend only).

The dependent variable for individualisation is arguably the most ambiguous of the constructed variables. If a strong say in the training decision-making lies in the hands of the worker, is that good or bad? It might be contended that shared decision-making, with both the employer and employee participating in the decision-making process, is preferable to exclusive input from either. However, the variable is not constructed in this way.

Support of learning/education

Support for learning is an index measuring the level of support for education and learning of employees provided by the employer. This variable has been newly created and was not part of the 1996 study.

The pattern of independent variable effects on support for education/learning is similar to that of diversity of training (see appendix 4), which for reasons that will be discussed later, is not unexpected. Like most of the other dependent variables, the factors that significantly influence this dependent variable are a mixture of 'present' or operational factors and more structural factors (such as industry sector or the composition of the worksite's workforce).

Correlation between variables

There is a *high* degree of correlation between several of the *dependent* variables. This is partly because the workplaces committed to training do well in all of these indices, and partly because the indices overlap in what they measure. The more powerful correlations are listed below (Pearson's correlation, $r > 0.5$).

- diversity of training and reliance on external training: correlation $r = 0.8$
- diversity of training and formalisation of training: correlation $r = 0.6$
- diversity of training and support for learning: correlation $r = 0.7$
- reliance on external training and support for learning: correlation $r = 0.8$

The 'diversity of training' variable is strongly associated with a number of other dependent variables, as are a number of other variables (although more weakly). A possible interpretation of this phenomenon is that the indices of training activity, while they have been treated here as separate variables, in fact overlap in what they measure. An argument could be made for considering the dependent variables as a 'group' of indicators (or at least grouping subsets of variables where their correlation co-efficient is strong).

There is a *low* degree of correlation between the *independent* variables. This indicates that they were chosen wisely in the initial Hayton et al. (1996) study as non-overlapping factors.

Unfortunately this contradicts a possible explanation for the observation made with the analysis of each dependent variable, that when multi-factor log linear models were attempted after removing interaction effects, few significant relationships could be found. It was thought this result could be due partly to correlations between the factors, thus diluting their effect. The lack of evidence of interactions undermines this hypothesis.

Summary

In table 32, a summary of the significant factors influencing each of the seven indices of training activity is provided, shaded boxes indicating where a significant relationship was identified between a dependent and independent variable (significance is judged at the 5% level).

Table 32: Summary of findings of log linear analysis by dependent variable tested

Independent variables	Dependent variables (see key below)						
	A	B	C	D	E	F	G
Industry sector							
Size of worksite							
Australian ownership							
Workforce permanency							
Workforce professionalisation							
Workplace change							
New product development							
Competition							
Industrial relations coverage							
Quality accredited							
Strategic approach							
Enterprise culture							

Note:

Key to dependent variables

A = diversity
B = volume
C = reform engagement
D = external reliance
E = formalisation
F = individualisation
G = learning support

All seven indices of training are significantly influenced by workplace change. In the presence of such changes as job redesign, increase or decrease in staff numbers, decentralisation processes, diversification, take-over or merger, or the introduction of new ways of allocating work, training activity increases. Training increases in volume, structure, formality and externality.

Workplace change was an important factor in the Hayton et al. study (see Hayton et al. 1996, table 4.3, p.72). There were, however, some real differences in the findings of the current study when compared with those of the Hayton et al. study. An overview of the findings from the analysis of survey results from both studies is provided in table 33. Shaded areas in table 33 again represent significant relationships between independent and dependent variables found in the current study. Cells marked with an X represent significant relationships identified by Hayton et al. (1996).

Table 33: Comparison of findings of log linear analysis by dependent variable tested in the current and the Hayton et al. studies

Independent variables	Dependent variables (see key below)					
	A	B	C	D	E	F
Industry sector	X	X	X	X	X	X
Size of worksite	X	X	X	X	X	X
Australian ownership						
Workforce permanency						
Workforce professionalisation				X		X
Workplace change	X	X	X	X	X	
New product development						X
Competition						
Industrial relations coverage			X	X		
Quality accredited					X	
Strategic approach	X	X	X			

Note:

Key to dependent variables

A = diversity
B = volume
C = reform engagement
D = external reliance
E = formalisation
F = individualisation

The variables found to be most significant indicators of training activity in the 1996 analysis were industry sector and size of establishment. These were found to be significant in only some cases in this analysis. Larger establishment size did not predict increased training activity in this dataset.

In making comparisons with the Hayton et al. (1996) study, earlier cautions are reaffirmed. Any conclusions drawn from the findings of this study should be applied only to the industries studied. Moreover, some might argue that the analysis attempted was ambitious, and that the relatively small sample size was unable to support models of this complexity. We believe this not to be the case. When complex statistical procedures are applied to small samples, the results are often scattered findings of significance with no real pattern. In this analysis, there have been quite a few significant findings that indicate a reasonably consistent pattern, and which have some meaning when analysed. Thus it can be said that the whole set of data did support these models, although the smaller sub-groups of observations did not.

6 Discussion and implications

Methodology issues

This study was initiated primarily to add value to earlier studies conducted in the area, especially the major research effort by a collaboration between the University of Technology Sydney and Charles Sturt University and discussed earlier in this report (see Smith et al. 1994 and Hayton et al. 1996). The value-adding of this report was intended to be in the form of:

- ✧ testing the relevance of conclusions drawn from those studies for two new industry sectors
- ✧ highlighting the most relevant features of the model of training demand for two new industry sectors

The two industry sectors chosen for this study were process manufacturing and entertainment. These broad industry categories encompass chemical and oil, plastics, rubber and cablemaking, manufactured mineral products (process manufacturing), entertainment, libraries/museums, and film and television (entertainment-related) industry sub-sectors. The vocational education and training interests of the two broad industry categories are represented by the Manufacturing Learning Australia and CREATE industry training advisory boards. Both industry sectors are recognised for generally low levels of participation of their enterprises in (formal) training (with the exception of some sub-sectors such as libraries).

Because of the intentions of this current study *vis a vis* the earlier studies, including a desire to make direct quantitative comparisons across a range of training variables, it was decided to follow the methodology of the Hayton et al. study fairly faithfully. This included adopting the survey questionnaire format almost completely, after making minor modifications to adapt the original to a mailed administration process and updating some questions. Some questions were added (to explore aspects of competition and learning cultures), but no questions from the original study design were deleted.

In the remainder of this chapter the major findings relating to the most important influencing variables examined in this study are discussed. Where appropriate, comparisons with earlier studies, especially those reported by Hayton et al. (1996) are drawn. Overall however, comparable differences are dealt with as points of interest, and interpreted in a way so as to add 'colour' or 'flesh' to the bones of earlier studies, rather than labouring any implications for the model of training demand proposed by Hayton et al. The primary reason for not interpreting differences in findings with more vigour is that this study involved a much smaller survey sample population, spread across a smaller number of industry sectors. Hence, the findings have potentially less explanatory 'power'.

Moreover, most early studies identified and reported in the literature review, including the research reported by Hayton et al., focus on the effects of different influences on *training*. Contemporary thinking emphasises 'learning' as opposed to 'training' as a primary mark of interest (for example, Hager 1997; Research Forum 2000), even while acknowledging the integral nature of these two concepts. To the extent possible, this study undertook to review enterprises as learning environments, and to construct interpretations of findings equally from a learning as a training framework.

Perhaps more importantly, since the completion of the Hayton et al. study, the training package approach has been introduced to the vocational education and training system (ANTA 1998; Townsend 2000). Training packages potentially change the way 'training' or 'learning' is perceived, since they draw no distinction between the way competencies are obtained, only setting the standards and conditions for obtaining qualifications. Thus, previously ambiguous boundaries between formal and informal training approaches become even more meaningless in a training package world. The learning process issues evolve, even more than previously, into questions of efficiency and effectiveness.

Workplace change

The role of workplace change as a trigger or 'driver' of training activity has been confirmed as very important in the two industries included in this study. A direct question to worksite respondents in the mailed questionnaire survey about the factors that influenced training decision-making, elicited the response that change in the workplace was the most important factor driving learning/training effort.

Workplace change was explored in this study from two main perspectives—change as a result of *technological* innovation, and *organisational* change.

Technological change is most often identified in the literature as a key factor driving interest in training (Rogers 1999). This includes changes in the production process, method or equipment (Adler 1992; Groot 1997; Blandy et al. 1999). The development of new products is likely to result in technology change (Smith 1997) because of a requirement, at least in manufacturing settings, for a change of tooling and even equipment.

Organisational change results in alteration of people's jobs to better suit new organisational states/situations (Payne 2000). The sources of organisational change include downsizing, reduction in management layers, decentralisation, introduction of team management processes, diversification of business interests, and company merger or take-over arrangements.

Hayton et al. (1996) found, it seems to their surprise, little support in their survey data for a relationship between indices of training activity and technological change or new product development/innovation. This is despite finding strong support for these same factors in a large number of case studies and in surveyed worksite opinion. They rationalised this finding by suggesting that the implications of technological change, or new product development, while clearly likely to be important for training, could be concentrated among only a few workers (see also Cutler 1992; Tavistock Institute 1998; Payne 2000). A scenario could be imagined where a new piece of equipment is introduced to a manufacturing plant that allows the plant to produce and supply a product previously not marketed. The new equipment may require the training of only one or two operators and maybe a leading hand, a small proportion of the total workforce in the plant.

More broadly, similar questions about the level of influence of technological change on training have been raised. Cutler (1992) in looking at the impact of training across a number of European countries, called for clear understanding of the dimensions of training, arguing that technical training is often quite limited in scope. He warned that:

> *... if the effects of training operate via imparting technical skills to 'key' personnel then a programme aimed at raising* overall *skill levels (workers generally) could have no significant effects on work performance.*
>
> (Cutler 1992, p.169)

In the lexicon of this study, based on the above discussion and arguments, it would be proposed that technological change will invariably result in training outcomes, but the volume of training (in terms of people trained and the expenditure on training) will appear marginal.

Interestingly, the findings of this study of two distinct industry sectors are contrary to the above, indicating the effect of new product or services development was strong on four of the seven indices of training activity, *including* training volume. Why this should be so is not immediately apparent; however, it is hypothesised that the sheer magnitude of worksites experiencing such change, and the uniformity of this change across industry sectors, was a contributing factor to an effect being manifested in this study. Just over two-thirds of worksites in this study claimed to have made a major investment in new technology, plant, equipment or facilities in the last three years (a slightly higher proportion of MLA industry sector worksites). An even higher proportion (84%) asserted they had introduced new products or services (a slightly higher proportion of CREATE industry sector worksites). These figures can be compared with those developed by Rogers (1999) through an analysis of Australian Workplace Industrial Relations Survey (AWIRS) data. These data revealed just over 30% of enterprises had undergone a change of any sort in either of the two survey years (1990 and 1995).

The effect of organisational change is less ambiguous than that of technological change. In the current study organisational change (measured through changes to job roles and organisational situations) is strongly related to all seven training activity variables. Similarly, the Hayton et al. study was able to find a statistically significant relationship between organisational change and all of the dependent training variables tested (Hayton et al. 1996). They argue organisational change is likely to have a more profound effect across an entire worksite or enterprise than other causes of change, with every worker likely to be affected by most workplace changes and therefore requiring new skills to enable them to adapt.

Several authors suggest that *change*, in any guise, might best be considered as a single variable, since all forms of change are likely to impact on training/learning requirements (Mabey & Salaman 1995; Allen Consulting Group 1999). Rogers (1999) lists four main areas of possible change within an organisation:

- ✧ change in product or service
- ✧ restructuring of how work is done
- ✧ reorganisation of management structure
- ✧ new plant, equipment or office technology

Rogers (1999) found that there were significant differences in the frequency of the different types of change listed above, but could argue that any of these changes in a workplace today will have powerful ripple effects across an organisation. One possibility that Rogers raises, however, is whether training (at least external training) is driven by change, or rather is a precursor for change to take place. The views of worksites surveyed in this study suggest that change stimulates training. Nevertheless, one can easily imagine how change and training can become interdependent over time, each 'feeding' the other. Indeed, modern management theorists (for example, Mabey & Salaman 1995; Covey 1999) suggest that successful organisations of the future will need to be constantly evolving, in a dynamic state of change, and underpinning this process will be a culture that values and facilitates learning.

Size of the worksite

Hayton et al. (1996), after analysing survey data, found worksite size (measured in number of employees working at that site) to be positively associated with all indices of training; that is, larger worksites were likely to have a greater volume of training, to be employing more diverse training strategies, and for the training to be more formal and structured. The current study replicated these findings for only three indices of training, all of which relate to the structure and formality of training activity, and not to the volume of training. This is despite size of worksite being significantly associated with a number of the independent variables.

The interesting aspect of the current study is the absence of any relationship between size of worksite and training effort. Apart from Hayton et al.'s findings in this regard, the literature is

replete with articles offering the opinion that size does count, and that larger enterprises invariably train more and at a higher standard (for example, ABS 1998; Freeland & Ball 2000). Only a small number of voices seem prepared to question this conventional wisdom (for example, Smith 1997; Gibb 1999), generally arguing training by small enterprises is not less, just different. In regard then to the findings of this study, there are a number of issues to consider.

First, there is the concept of size itself for the industries included in this study. Several of the industry sectors in this study have enterprises or worksites which can be 'wrongly' classified if using number of employees as the defining criteria. For instance, in the chemical and oil industry it is not uncommon for enterprises or worksites to have a multi-million dollar revenue, but be operated by a staff complement of less than 20 (permanent) workers. Similarly, in other areas of continuous process manufacturing (for example, cement manufacture, glass manufacture, oil refineries), the enterprise can be defined as small or medium on the basis of number of employees, but behave like a large enterprise in most areas of management decision-making (including competency development).

Second, it is hypothesised that worksite managers (those who responded to the survey questionnaire) have become more 'educated' since 1996 in recognising training effort. Hayton et al. themselves noted that small businesses could easily underestimate training effort:

> *Training in small business is often subsumed under other activities that are not commonly recognised as training.* (Hayton et al. 1996, p.66)

Contributing to the process of 'education', training packages have rendered any distinction between formal training ('sending the apprentice to TAFE') and informal, on-the-job training ('buddy' techniques) almost meaningless. In so doing, the training package approach has legitimised forms of 'training' that had not previously been considered by managers. According to Field (1998) the types of learning that occur in small business (that might not be counted as 'training') include:

- working in other job areas
- participating in staff meetings and project briefings
- contributing to project work
- learning from suppliers' representatives
- association with other organisations
- experience in larger businesses

ABS surveys, business associations, local registered training organisations and others have been acting in unintended concert to increase the awareness of managers about what constitutes training. If all efforts to train, including the unstructured and informal efforts, are counted within the total estimate of training volume, then smaller enterprise training effort begins to approximate (proportionately) much closer the effort of larger enterprises.

Third, there is some evidence that in the plastics, rubber and cablemaking industry at least, smaller-sized firms have been for many years proportionally higher-volume trainers than larger enterprises (Fuller & Hastings 1993). Table 34, extracted from Fuller and Hastings (1993), indicates that over the decade of the 1980s, smaller enterprises (by employee number) in that industry sector consistently had higher, proportional training expenditure.

A key issue in table 34 is that the measure of training effort used in the Fuller and Hastings study—training expenditure as a percentage of turnover—is quite different from more commonly used measures. For instance, the measures employed in our study were 'proportion of workers trained' and 'expenditure as a proportion of payroll'. There are no comparable figures provided by Fuller and Hastings, so it is possible that on the more commonly used measures, training effort trends might resemble more expected outcomes (suggesting an evenness between enterprise size in training volume). In support of such a proposition, Fuller and Hastings did find that only large establishments (100+ employees) tended to have a training budget.

Table 34: Training expenditure as a proportion of turnover in the plastics, rubber and cablemaking industry

Size of enterprise (no. of employees)	Training expenditure as a percentage of turnover		
	1981–82	1984–85	1986–97
1–9	0.60	1.16	4.54
10–39	0.54	1.25	1.10
40–99	0.31	0.75	1.01
100+	0.12	0.14	0.20

Source: Fuller and Hastings (1993)

The results of this study overall suggest that enterprise or worksite size in the studied industries is an influencing factor on the *nature* of training (training reform engagement, reliance on external providers, and training formalisation) but not on the *volume* of training. Thus, size of enterprise becomes a factor when training is exclusively formal, and involves negotiating and maintaining a relationship with institutional providers of education and training. Small enterprises are at a disadvantage when compared with larger entities because they lack dedicated training personnel who can liaise with external bodies to, first of all, understand the requirements of formal training, and secondly, negotiate with training institutions, both public and private, to deliver training appropriate to their needs. Also, they are less likely to engage in 'strategic' training effort, such as that represented by external courses or qualifications in general, because their needs are more immediate and possibly operationally driven. Moreover, those forms of vocational education and training have not been designed with small enterprises in mind, and so are not surprisingly ignored:

> *... small business employers have found an alternative to the product the VET system has to offer and they are using it. The training and learning culture does exist but it may not be the one the VET system has in mind.* (Gibb 1999, p.58)

In the industries studied then, size may be a useful indicator of the barriers to training the enterprise might encounter, but it is likely to be a poor indicator of the likely interest in training. The market segmentation of employers adopted by the Australian National Training Authority in their marketing strategy for VET (ANTA 2000) is likely to be a better means of identifying interested enterprises. For instance, one would expect small enterprises to fit the 'here and now' market segment category (see Research Forum 2000 for details of the categories), and the aim would be to either engage them in training on their own terms (OTFE 1998) or to promote them into the 'high achiever' category. In this latter category they will be more open to current VET offerings. A way of further refining the market segment classification of ANTA, based on discussion earlier in this chapter, would be to identify the 'change' status of the enterprise as a second vector of interest. Thus, it might be expected that a small 'here and now' enterprise in a state of change (for instance merging with another small enterprise) would be very open to training promotional efforts.

Industry sector

In the current study industry sector was not observed to be related to either volume or diversity of training indices. A relationship was established between industry sector and indices for training reform engagement, training formalisation and individualisation of training decision-making. Hayton et al. (1996) identified a strong relationship with all indices of training analysed.

When reflecting on the industry variable, it is interesting to consider what is actually being measured. In this study, the influence of industry sector when significant, was split in two directions. One set of industry sub-sectors (entertainment, plastics, rubber and cablemaking, libraries) influenced the *nature* of training indices in a positive way; that is, worksites in those industries were more likely to have engaged with the reform agenda and have formal training arrangements. Other industry sub-sectors in the study (chemical and oil, manufactured mineral products, film and TV) were associated with low levels of formality of training. From other

studies it is known that enterprises in the plastics and libraries/museum industries do favour formal training (Fuller & Hastings 1993; Dutneall, Hummel & Ridoutt 1998). However, there is no evidence of a preference for formal training in the entertainment industry, and no *a priori* reason for assuming entertainment industry enterprises would hold such a preference. On the other hand, in parts of the manufactured mineral products industry, strong links have been developed recently between industry and the formal VET institutions (Curtain 1994) that would lead to a presumption of that industry's positive association with formal training indices.

Hayton et al. (1996) argued in support of their findings that certain industries have particular profiles of training arrangements that predispose (or otherwise) enterprises in those industries to increased training effort. They cite as the obvious example those industries that have a tradition or 'culture' of trade training for entry to the workforce (for example, metals, construction). They also appeal to the logic of industries being characterised by different levels of capital intensity, exposure to international competition and rates of technology change, all of which may contribute to an 'organisational culture' conducive to higher (individual) enterprise training expenditure.

The notion of an enterprise culture that fosters or facilitates higher levels of training/learning effort has proved popular amongst many researchers (Schuck 1996; Garavan 1997; Edwards & Usher 2000), although defining its parameters and characteristics has proved elusive. In this study, an effort was made to 'measure' an enterprise's culture, in terms of its propensity to facilitate learning activity. An index of culture was constructed based on the enterprise's means of identifying and solving problems, the approach to risk-taking, the response to 'mistakes' and the degree of enterprise 'vision'. These are characteristics of organisations which commentators in the literature have identified with some degree of consensus as being integral to a supportive learning culture (for example, Watkins & Marsick 1996; Birleson 1998; Covey 1999). The index was not validated, so findings from analysis involving the index need to be considered with caution.

A conducive enterprise culture for learning was found to be significantly related to two dependent training variables—engagement with the reform agenda and use of external training resources. This outcome was in keeping with the result of that for the industry sector, the effect being largely on the nature of training. However, one might have expected enterprises with a learning culture to be both high-volume trainers and to call on diverse means to create learning opportunities. Of course, as noted above, not too much should be interpreted from these results, since the very concept of a learning culture is still evolving, and the attempt to capture this concept in a quantitative index or scale intellectually challenging at best. Moreover, as Mabey and Salaman (1995) have suggested, the term 'learning organisation' may simply be shorthand for describing an organisation that is building flexibility, team work, employee participation, and developing employees through a process of continuous learning. In this latter sense, the enterprise is essentially being built to respond positively (maybe even proactively) to *change*.

Quality

Like the variable of competition, a commitment to quality processes was not able to be significantly associated with training activity except for one index: formalisation of training. This relationship was established in both the Hayton et al. study and the current study. In the current study the association was stronger.

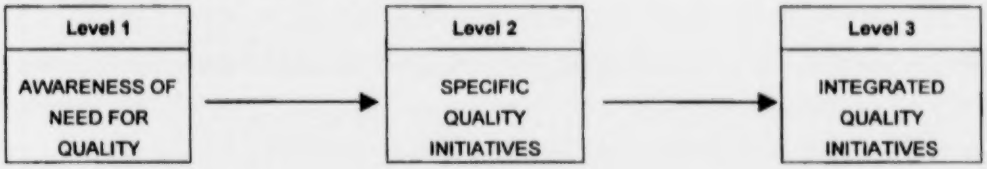
Paradoxically, and in an almost exact replication of the findings of Hayton et al. (1996), the current study found *opinion* of surveyed worksites was strongly of the view that quality concerns were an important driver of training activity. Almost half of the enterprises (45%) believed it was the single most important factor influencing training activity decision-making. The focus by enterprises on quality is understandable given the prominent place of quality in modern organisational thinking and increasing evidence of a relationship between quality improvement

and organisational performance (for example, Vogel & Hausner 1999). Based on a five-year study of manufacturing enterprises in Australia, Terziovski confirmed that a commitment to quality could lift an organisation's performance and suggested that 'improvements in quality lead to increases in productivity, performance and profits' (1998, p.42).

How to reconcile then, on the one hand, strong opinion that a commitment to quality is an important driver of training effort with, on the other hand, the quantitative evidence, through the survey results, that quality commitment has little to do with training effort.

A first possible explanation is the suggestion that different forms and levels of commitment to quality result in different training activity outcomes. The index for commitment to quality was constructed from the responses to two questions—the first related to being accredited under a relevant standard (for example, ISO 9000) and the second to adoption of a quality management program. These two measures are what might be considered 'higher-order' manifestations of a commitment to quality. Indeed Hayton et al. (1996) considered these to be within the highest of three possible levels of commitment as shown in the illustration in figure 9.

Figure 9: Varying enterprise levels of commitment to quality



It is argued by Hayton et al. that only at level 3 commitment are there significant training implications. Terziovski (1998) also suggests that lower levels of commitment to quality are characterised by more marginal company involvement. Thus, at level 3, whole-of-organisation effort is required to comply with accreditation standards or to give meaning to total quality management (TQM) principles. At lower levels of quality commitment such as level 2 (customer service and quality control) the common perception is that the burden of concern for quality commitment unconsciously falls on the shoulders of a small group of workers. In most organisations at level 2 commitment or lower, this will be the 'quality control team' or worse the quality control officer (Terziovski 1998).

A second explanation comes in the link between quality and much broader concepts and processes of innovation, learning culture and organisational change generally. Russell (1999) notes the twin tensions within the pursuit of quality between the idea that quality is about establishing predictable processes on the one hand, and about innovation and continuous improvement on the other. He suggests this tension can be resolved by considering innovation as being at the 'sharp' end of quality, providing the process with vitality:

> *Innovation introduces new ideas to organisations that then integrate them into their processes, products and services. People then refine those processes, products and services by 'continuous improvement'. They also (re)define the standards needed to achieve consistency in what they do.* (Russell 1999, p.51)

In all likelihood, enterprises at the beginning of the quality journey will seek to gain benefits through control and discipline, which might be achieved through monitoring and auditing of processes by a comparatively small proportion of an enterprise's workforce. As the commitment grows and strengthens (towards what Hayton et al. would consider 'level 3'), a more holistic approach to quality is adopted that incorporates innovation and change as not inevitable but welcome events. Vogel (2000, p.12) links innovation with new products and services, improved processes and 'changing the strategic nature of the business', and then proposes that this can all be managed within a quality system framework (such as the Australian Business Excellence Framework). Underpinning this concept of quality, within a very broad setting of change, the implications for training/learning are argued to be profound, and thought to be best articulated through the development of a 'learning culture' or a 'learning organisation' (for example,

Monckton 1999; Sutton & Dewald 1999). In reviewing the Hayton et al. studies, Smith (1997) discussed the importance of the development of generic behavioural skills related to quality and summarised thus:

> *These were essential to the new forms of work organisation that were often being introduced ... and to the pursuit of quality service and production that was the most common innovation that the research team found ...* (Smith 1997, p.145)

The second explanation then would suggest that a commitment to quality at a level whereby it impacts upon training activity is integral to the change process. It therefore becomes statistically 'submerged' or hidden behind the more powerful effect of change *per se* (which has already been discussed in this chapter).

Workforce permanency

'Workforce permanency' was an independent variable constructed from survey responses to the question on the composition (in terms of employment status) of each worksite's workforce. The variable measures the proportion of the workforce in permanent, full-time positions. It is hypothesised, based on the literature review (Blundell, Dearden & Meghir 1996; Groot 1997), that a more permanent (and stable) workforce encourages training investment.

No evidence of this was found in the Hayton et al. study in 1996, but in this current study workforce permanence was significantly and positively related to five indices of training activity: training diversity, external reliance, formalisation, learning support and individualisation. These are all variables that describe the *nature* of training.

It is of interest that no relationship was observed between workforce permanency and the volume or extent of training activity. This suggests that training investment in a more permanent and stable workforce does not result in more training, but rather in more formal outcomes (for instance in the form of qualifications). Since engagement with the training reform agenda is not a significant relationship, the qualification outcomes likely to accrue in enterprises with high workforce permanency must come as a result of relationships with external institutional training providers (presumably offering accredited courses).

Competition

In the Hayton et al. (1996) study, competition was not found to be influential on any of the indices of training analysed. The same result was obtained in this study.

Hayton et al. chose to view the lack of any observed relationship from analysis of survey data between competition and training activity as the former variable's effect being 'masked':

> *... it is likely that the relatively weak predictive power of the quality, ... and competitive measures was the outcome of their impact largely being captured by other variables, including the measure of workplace change.* (Hayton et al. 1996, p.76)

The confidence Hayton et al. maintained in competition as an influencing factor (and thus retained this variable in their model as an 'environmental' factor) they believed justified on the basis of its prominence in case study discussions. There are, however, three points to consider that would give cause to question the competition variable as a genuine influence on training activity.

First, the hypothesis that competition might act through workplace change needs to be challenged. Rogers (1999) in analysing AWIRS data, and only including commercial organisations, found that various measures of competition were only weakly associated with some elements of change. And even where a relationship existed; for instance, between having many competitors and introduction of new products/services and restructuring work, this

relationship was negative (that is, it *reduced* the likelihood of change). Indeed, highly competitive markets, where there are no clear market leaders, make it difficult for enterprise decision-makers to determine the strength and direction of change.

Second, several studies discussed in the literature review disputed whether competition in the market had any real effect on training. Fraser (1996) for instance found little support amongst Australian employers for competition as a driving factor. Only 3% identified it as an important factor. Ergas and Wright (1995) noted that the responses to intensified competition were many, and recourse to training was only one of these options. Marshman and Associates (1996) found that, in some industries at least, the effect of competition on training, if at all, could be negative (that is to reduce the 'cost' of training).

Third, competition needs to be considered, if at all, not as a broad influence but rather in the form that it presents. Rogers (1999) measured competition in three ways—intensity, number, and whether it was international. In the current study, competition was similarly measured in terms of intensity or level, whether it was domestic or from overseas, and whether it was on the basis of price or quality. Interestingly, while over 80% of worksites surveyed indicated that the environment had become more competitive over the last year, only 12% believed this had effected the level of training a lot.

Each of these points has particular relevance to the process manufacturing and the entertainment/leisure industries. For instance, the major form of competition, especially for process manufacturing industry sector worksites, is on the basis of price, which Dutneall, Hummel and Ridoutt (1998) have theorised elsewhere is not conducive to an increase in training activity.

At best, competition appears to have an indirect effect on training, which is ambiguous in its direction, depending on the idiosyncratic circumstances of an enterprise at a particular time. At worst, competition has little effect on decisions managers make about training activity.

Workforce professionalisation

Hayton et al. (1996) termed this variable, 'occupational structure', created as it is from a measure of the proportional demarcation between professional/managerial and other occupational categories. This study found this variable to be related to two indices of training: volume, and engagement with the training reform agenda. Hayton et al. also found a significant relationship between occupational structure and reliance on external training sources and individualisation of training decision-making.

The literature provides unambiguous evidence that workers with post-school qualifications are more likely to initiate and complete formal training than workers without similar education backgrounds (Blundell, Dearden & Meghir 1996; Blandy et al. 1999; Roussel 2000). That there is a difference between the two studies (Hayton et al. and the current study) in the relationships with indices of training activity is of limited concern. It could be attributed to the particular nature of the industries included in this study. It is more likely however, that the relationship of occupational structure with training is a broad underpinning one, and supports the place of this variable as a *mediating* factor rather than a driving factor.

Strategic approach

Hendry (1991) proposed that enterprises with training in their strategic or business plans were more likely to invest in training than those without such 'direction'. While a little skeptical, at least as far as accepting this relationship as direct and instrumental, Hayton et al. (1996) nevertheless found through analysis of survey data, that the existence of a training section in the business plan was related to a number of key indices of training activity. They seemed reluctant

however, based on additional case study evidence, to ascribe to this finding the interpretation that this implied managers looked strategically at training effort:

> *... training (should not be) regarded as a strategic issue in itself. Rather training was required to help implement strategy which might contain some key human resource indicators.*
>
> (Hayton et al. 1996, p.63)

In the current study no relationship was found between the existence of training in the business plan and training activity. This was so even though the existence of business plans was found to be widespread (81% of enterprises) and most (71%) mentioned training. In some sense this seems a more appropriate finding, and one that resonates more with anecdotal experience and the balance of views expressed in the literature (for example, Kane, Abraham & Crawford 1994).

This experience suggests that business plans are generally often not implemented by enterprises, certainly not to the letter. In particular, inclusion of training in the strategic/business plan may be more lip service, and would only have significant training implications if considerable change (such as establishing a 'learning culture') were implied. On this point, findings in this study as noted in an earlier section, suggest that 'learning culture' is related only to the nature of enterprise training, and does not influence training volume.

It seems therefore that, when strategic plans, even those incorporating training and development sections, are implemented, they are still only the reflection or a guide for predetermined actions, not a source of initiative (that is, a driver of activity).

Training indices

Hayton et al. (1996) after completing the log linear analysis of the survey data, classified the six training variables (or indices of training activity) into two broad categories as follows:

Extent of training	Volume of training
	Diversity of training
Nature of training	Degree of formalisation
	Use of external training
	Individualisation of training
	Training reform agenda engagement

They supported the above groupings on the basis of estimated correlations between the variables, and in fact proceeded to argue the concept of a broad variable of training activity.

In the current study, at least for the industry groups included, there is support for a slightly different grouping of the dependent variables. Based on observed significant interrelationships ($r > 0.5$) between dependent variables in this study, the groupings would be:

Extent of training	Volume of training
Character of training	Diversity of training
	Degree of formalisation
	Use of external training
	Learning support
Outcomes of training	Training reform agenda engagement

The final variable, individualisation, has been omitted from this listing because, first of all, it is weakly correlated with other variables, and secondly and more importantly, unlike all the other variables, individualisation yields only ambiguous information upon which to make decisions.

The model of enterprise training

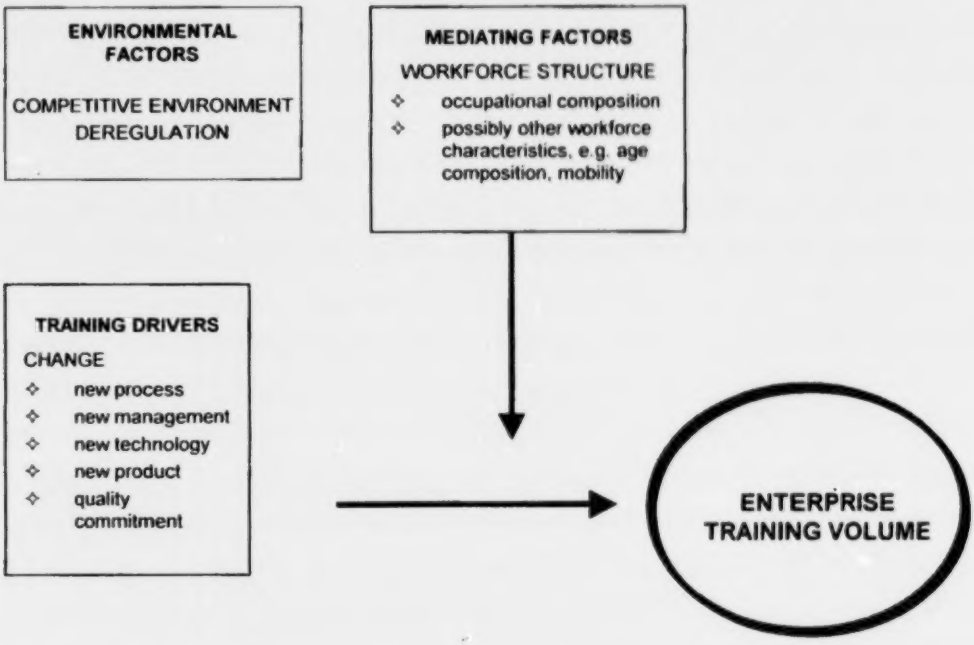
Often those trying to develop models strive for complexity, continually adding variables to the model in an attempt to explain an increasing proportion of variation. The findings of the current study suggest that the model proposed by Hayton and his colleagues is very sound. In relation to the industries included in this current study, the model could be made more applicable by not adding complexity, but rather through simplification.

The first way of simplifying their model is to reduce the 'outputs' of the model to two forms only of training activity:

- extent of training
- character of training

The production of the first of these outputs, the extent or volume of training, is described in figure 10.

Figure 10: Simplified model for volume of enterprise training in the process manufacturing and leisure and entertainment industries

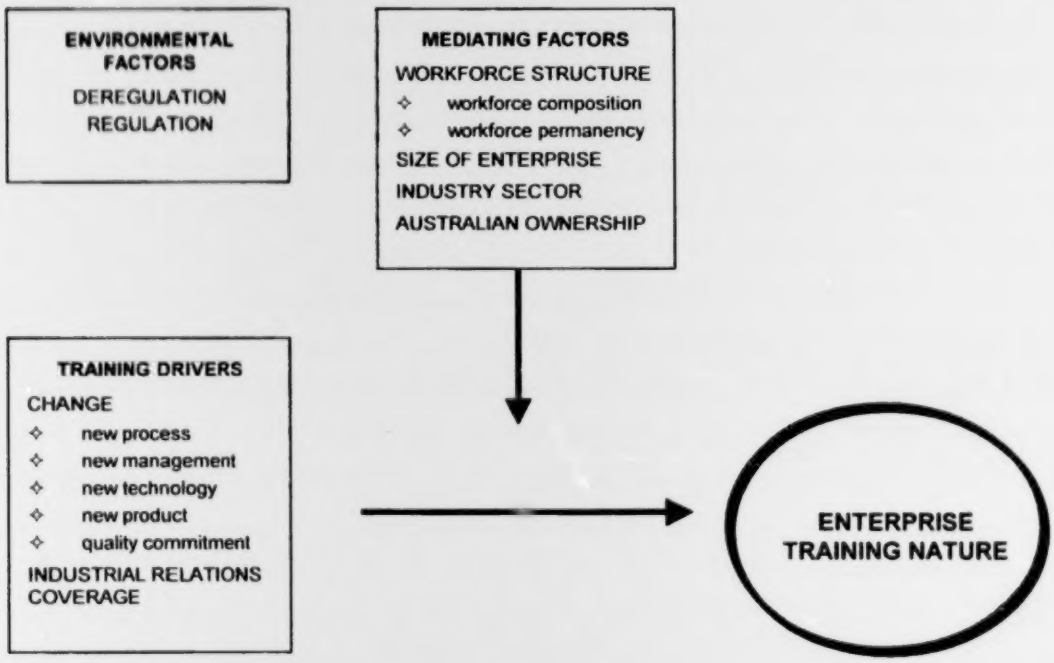


In this simple model of training *volume*, training impetus is gained from some form of change. The change can be largely operational (new technology/product) or strategic (quality commitment, new organisation of work). The change, or the perceived need for it, will generally be determined by consequences experienced from within the enterprise (including partly external processes such as company take-overs and mergers). Occasionally however, enterprise change will be underpinned by an event in the environment, beyond the control of the enterprise, such as new legislation (for example, the *Training guarantee act*, or a new piece of OH&S legislation). Competition may also be a part of the environment's broad effect, helping to shape change decisions (for instance, whether to accept a merger offer). The drivers of demand for training will be mediated by factors relating to the workforce composition, particularly its degree of professionalisation.

A second simple model describes the output of training in terms of its nature or *character* (see figure 11). This includes the type and diversity of training, the source of training, and the enterprise level of support for training.

The factors in this model differ most from the first simple model by the inclusion of more modifying factors. Thus, it is expected that factors such as the size of the enterprise and the composition of its workforce will influence the *capacity* of the enterprise to engage with the vocational education and training system. Depending on this capacity will be the enterprise's relative success in extracting full value from the wide range of training opportunities and the possible outcomes (such as qualifications) available. It is believed that environmental factors play a muted part in influencing the nature of enterprise training, and when they do, it will be more in the form of government or bureaucratic attempts to direct the course of training investment. For instance, government policy on matters such as training packages or user choice might affect the nature of training at the enterprise level.

Figure 11: Proposed model for nature of enterprise training in the process manufacturing and leisure and entertainment industries



Conclusion

There is a number of possible policy implications emerging from the findings but only a few will be explored here. First, it would seem important that many enterprises, especially smaller and medium-sized enterprises, already undertake considerable amount of 'unrecognised' training (Gibb 1999). This term is used in the context of the current training package environment where recognised training by definition means that which results in a qualification (or at least assessment against the national competency standards). Increasingly however, many workplace experiences which (intentionally) result in learning but are not labelled 'training' by enterprises themselves, are coming to be accepted as such by trainers. Better ways of identifying, describing and measuring this 'unrecognised' training is a key step towards improving its efficacy.

Second, support to enterprises may be more valuable if it shifts from an emphasis on volume (extolling the virtues of more training) to an emphasis on the nature (effectiveness and efficiency) of training activity. This is particularly pertinent to small businesses. Only 34% of the enterprises surveyed in this study had used competency standards (national or enterprise) as a basis for any training in their enterprise. This low level of uptake of national training initiatives is

of concern, not because it reduces the possibility of increasing qualifications, but because competency standards set appropriate benchmarks for recognising whether training is effective. The VET system needs to understand why it is that smaller enterprise size inhibits full engagement of those enterprises with the wide range of training resources available, and then it should seek to compensate for those infrastructure elements of larger enterprises that are deficient in smaller businesses. For instance, registered training organisations might do better if, rather than 'selling' training courses, they offer (at least in the first instance) human resource management functions that build on what enterprises are already doing (OTFE 1997; Gibb 1999). Thus, if informal buddy system training is the norm in an enterprise, such a system may be best aided by introducing structure into the process. There are MLA support materials in production which provide an example of how this might be accomplished.

Third, the study results (allied with those reported by Hayton et al. 1996) suggest several ways of identifying enterprises and locating them within the 'market' for training services. ANTA (2000) has developed a taxonomy for segmenting the market, classifying all enterprises/worksites into one of three categories:

- 'not interested'
- 'here and now'
- 'high achievers'

A layer of sophistication might be applied to this taxonomy by utilising some of the significant variables identified in this study. For instance, if there is an expressed desire to increase training volume, then marketing might be best directed at those 'not interested' and 'here and now' enterprises embarking on significant *change*. According to this study these are the enterprises which would respond most positively and immediately to offers of training support. Alternatively, if the nature of training conducted in enterprises was thought to be requiring change (more formal, stronger links to VET institutions), then the appropriate market to target would be smaller and medium-sized 'here and now' enterprises possibly looking to formalise their organisational structure. However, above all, and at least in the industries included in this study, if the enterprise is not currently being subjected to change of some sort, then it is unlikely to be in the 'training market'.

Finally, the study results emphasise the diversity of circumstances in which training activity occurs in enterprises and the importance of taking due cognisance of those differences in order to maximize the volume of training activity and tailor its nature most economically and effectively to enterprise requirements.

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Appendix 1: Survey administration

Survey distribution

A first version of the self-completion questionnaire was sent by mail in November 1999. Participants were given three weeks to respond. All surveys were sent with a reply-paid envelope with participants being given the option of responding by either mail, fax or email. The great majority of responses were received by mail.

Those who did not respond to the first round of surveying were sent a revised questionnaire in March 2000 and asked to respond by the 14 April 2000. A telephone call was used to follow up those who did not respond to either the first or second mailing of the survey questionnaire. At the telephone follow-up, the contact people within the selected companies were reminded of the survey and were asked if they could fill them in and either fax or post them back. Several people requested that an additional survey be faxed to them as they did not recall receiving it or had thrown it out.

A personalised covering letter was mailed with the self-completion questionnaire at both mailings, explaining the purpose of the survey. Information on the survey was also disseminated by word of mouth through ITAB contacts with industry.

Sample population

The mailing list for sending the survey questionnaires was obtained from the ITABs and the files of the consultant, Human Capital Alliance (HCA). Since it has been involved in consultations with these industries on a regular basis for four years, HCA has one of the most up-to-date databases in Australia for these industries.

The initial round of surveys was sent to a sample of 446 companies in the following industries. The number of companies surveyed in each industry is outlined in table A.1.

Table A.1: Distribution of sample population across industries for first survey

Industries	Number of companies surveyed
Chemical, oil and hydrocarbons	51
Plastics, rubber & cablemaking	109
Manufactured mineral products (clay, ceramics, concrete, cement, glass)	50
Libraries	99
Film, television, radio and multimedia	30
Entertainment (venue management, performing arts, cultural centres	107
Total	**446**

Respondents from the first round of surveys numbered 112. These, along with companies identified as out of scope, were removed from the sample for a second round of surveys. The

remaining were sent a second questionnaire, slightly modified as discussed in the previous section. The number of companies resurveyed in each industry is shown in table A.2.

Table A.2: Distribution of sample population across industries for second survey

Industries	Number of companies surveyed
Chemical, oil and hydrocarbons	34
Plastics, rubber & cablemaking	73
Manufactured mineral products (clay, ceramics, concrete, cement, glass)	22
Libraries	67
Film, television, radio and multimedia	29
Entertainment (venue management, performing arts, cultural centres)	68
Not specified	6
Total	**299**

Appendix 2: Description of dependent variables

Diversity of training

This is a composite index drawn from combined scores in questions E1, E2, E3 and E4. These are multi-part questions which ask:

- whether particular types of trainees or training/education opportunities (e.g. apprenticeships, traineeships) have been present at the worksite in the past year
- the level of organisational contribution to training at outside venues (e.g. payment of course fees and/or time/paid leave to attend TAFE, university, etc)
- the type of internal training provided (e.g. induction, mentoring, job rotation)

For each question the available responses were 'yes', 'no' and 'don't know'. The score was generated by giving every 'yes' question a score of 1 (giving a possible range of 0 to 23) and then allocating an index number of 1 to 5 over this range. The index assigns high values to respondents who had a high variation in the types of training available. The index takes a value of 1 (minimum diversity) to 5 (maximum diversity).

Volume of training

This is a composite index drawn from combined scores in questions E5 (proportion of employees involved in training) and E6 (percentage of payroll spent on training). The index takes a value of 1 (minimum volume) to 5 (maximum volume).

Training reform engagement

This is a composite index drawn from combined scores in questions E10 (training based on national standards), E11 (organisation is a registered training provider) and E1a–c (worksite has apprentices or trainees).

The index takes a value of 1 (minimum training reform) to 5 (maximum training reform).

Reliance on external training

This is a composite index drawn from combined scores in Questions E1a–c, E2, E3h, E4 and E7a–b.

These are questions that ask:

- whether particular types of trainees or training/education opportunities (e.g. apprenticeships, traineeships) have been present at the worksite in the past year
- the level of organisational contribution to training at outside venues (e.g. payment of course fees and/or time/paid leave to attend TAFE, university etc.)
- the opportunities to attend other worksites

- the availability of training by other organisations
- whether lists of training opportunities are circulated

The index takes a value of 1 (minimum external training) to 5 (maximum external training).

Formalisation of training

This is a composite index drawn from combined scores in questions E3a, d, e, E8, E9 and E11.

These are questions that cover:

- structured training opportunities (induction, structured job rotation, in-house staff development) in the workplace
- personnel responsible for training in training
- evaluation of training
- whether organisation is registered training provider

The index takes a value of 1 (minimum formalisation) to 5 (maximum formalisation).

Individualisation

This is an index drawn from combined scores in all five subsections of question E7 (how organisations ensure employee get the training they need). The index takes a value of 1 (minimum individualisation) to 5 (maximum individualisation).

Learning

This index measures the level of support for education and learning of employees. This is drawn from questions E2, E3e and E3h. These questions explore:

- the level of organisational contribution to training at outside venues (e.g. payment of course fees and/or time paid leave to attend TAFE, university etc.)
- the availability of in-house staff development courses
- the opportunities for employees to attend other worksites

This variable has been newly created and was not part of the 1996 study. The values range from 1 (minimum support for education/learning) to 5 (maximum support for education/learning).

Appendix 3: Description of independent variables

Sector

Respondents were from six different industry sectors (see table A.2). This variable tests whether there are significant differences between respondents in each of these sectors.

Size

Size of establishment is measured by number of employees. This is taken from question B4. There are five possible values (1= less 20, 2= 20–49, 3= 50–199, 4= 200–499 and 5= 500 or more).

Australian ownership (Aust)

This indicates whether the enterprise is Australian-owned. This is taken from question B3. There are two possible values (1=Yes, 2=No/Don't know).

Proportion of workforce in full-time employment (FTPerm)

This measures the proportion of the workforce who are permanent, full-time employees. This is taken from question C1. The ranges have been assigned scores: 1=Low (0-30%), 2=Medium (31-70%), 3=High (71%+).

Proportion of workforce in managerial positions (MgrProf)

This indicates the proportion of the workforce who are in managerial or professional positions. This is taken from question C2.

The ranges have been assigned scores: 1=Low (0-10%), 2=Medium (11-30%), 3=High (31%+).

Change

Workplace change index. This variable measures the degree of major change occurring in the workplace within the previous three years. This index was assembled using questions C3 (change in ranges of tasks) and C4 (structural changes). Both of these are multi-part questions asking about a set of changes.

The index was calculated by giving each affirmative answer (that is, answering 'a lot' in C3 or 'Yes' in C4) a score of 1 and then summing these, giving a possible score range of 0 to 15. These

score ranges were then evenly allocated an index number of 1 to 5 (low to high degree of change).

New products (NewProd)

This is a measure of whether new products and services have been developed in the previous three years and this is taken from question D9 (whether there has been major investment) and D10 (whether introduced new products or services).

The variable takes the value 1 to 3 (1='No' to both questions, 2='Yes' to 1 question, 3='Yes' to both questions).

Competition (Comp)

A measure of the level of competition for products and services within the last three years was taken from question C5 (1=increased a lot to 4=decreased).

Industrial relations coverage (IRCode)

This is a measure of industrial relations coverage of the site. This is taken from question D13 (award coverage) and D14 (proportion of workforce with training provisions included in their conditions of employment).

Greater weights have been given to 'Yes' answers for 'Awards' at D13 and high proportions of employees with training provisions included in their conditions of employment. The index has a range from 1 (little coverage) to 5 (maximum coverage).

TQM accreditation (Accred)

This indicates whether worksite is accredited or has TQM. This is taken from questions D7 and D8. The variable takes values 1 or 2 (1='Yes' to both questions, 2=otherwise).

Business strategies

This shows whether there is a strategy in place in the business plan, vision statement or mission statement covering skills development and training. This is taken from question D3. The variable ranges from 1 ('No' response to all three) to 4 ('Yes' response to all three).

Culture

This indicates whether there is a learning culture in this workplace. This is taken from the responses to question E14 which asks 9 sub-questions about support for learning within the organisation.

The index was compiled by giving high scores to 'Strongly agree' and 'Agree' and zero scores for 'Neutral', 'Disagree' and 'Strongly disagree'. The scores were then converted to a 1–5 index.

This variable has been newly created and was not part of the 1996 study. The values are from 1 (minimum existence of a learning culture) to 5 (maximum existence of a learning culture).

Appendix 4: Details of log linear analysis

Diversity of training

This variable was tested in 2-factor log linear models with each of the following *independent variables*, one at a time:

- **SECTOR:** industry sector
- **SIZE:** size of establishment measured by number of employees
- **AUST:** whether the enterprise is Australian owned
- **FTPERM:** the proportion of the workforce who are permanent, full-time employees
- **MGRPROF:** the proportion of the workforce who are in managerial or professional positions
- **CHANGE:** workplace change index
- **NEWPROD:** a measure of whether new products and services have been developed
- **COMPETITION:** a measure of the level of competition for products and services
- **IRCODE:** a measure of industrial relations coverage of the site
- **ACCRED:** whether worksite is accredited or has TQM
- **STRATEGI:** whether there is a strategy in place in the business plan covering skills development and training
- **CULTURE:** whether there is a learning culture in this workplace

Of these, the significant independent variables; that is, factors which had a statistically significant effect on diversity of training (using 2-factor log linear modelling to determine effects), were as follows:

- **FTPERM**: proportion of workforce who are full-time permanent employees (significant $p=0.003$)
- **CHANGE**: index of change in the workplace ($p=0.002$)
- **NEWPROD:** new products introduced ($p<0.0005$)
- **IRCODE**: proportion of workforce covered by awards and agreements ($p=0.019$)

In each case, the effect was positive; that is, higher levels of the independent variable were associated with higher training diversity. All quoted p-values are from the chi-squared test. The interpretation is that each of these four factors has a significant effect on diversity of training.

Particular combinations of the significant variables were tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were FTPERM/NEWPROD and CHANGE/IRCODE. The combination FTPERM/NEWPROD was a significant combination, however when re-run taking interactions between the factors into account, it was not. The combination CHANGE/IRCODE was not significant.

Volume of training

This variable was tested in 2-factor log linear models with each of the independent variables listed above in the analysis of diversity of training analysis. Each variable was tested one at a time.

The significant independent variables; that is, factors which had a statistically significant effect on volume of training (using 2-factor log linear modelling to determine effects) were as follows:

- **MGRPROF:** proportion of workforce who are managerial or professional (p=0.05)
- **CHANGE**: index of change in the workplace (p=0.01)
- **NEWPROD**: new products introduced (p=0.005)

In each case, the effect was positive; that is, higher levels of the independent variable were associated with higher volumes of training. The interpretation is that each of these three factors has a significant effect on volume of training, although the effect of the workforce composition (proportion in managerial or professional positions) is only at the 95% confidence level.

Particular combinations of these variables were then tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were MGRPROF/CHANGE, MGRPROF/NEWPROD and CHANGE/NEWPROD. Each of these combinations was a significant combination, however when re-run taking interactions between the factors into account, was not.

The interpretation is that, while each of the three factors has a significant effect when tested alone, combinations of factors are not significant when interactions are taken into account. This could be due partly to correlations between the factors diluting their effect, and partly due to the relatively small sample size being unable to support models of this complexity.

Training reform engagement

This variable was tested in 2-factor log linear models with each of the independent variables as listed earlier in relation to the diversity of training variable. The analysis was conducted with each variable, one at a time. The significant independent variables; that is, factors which had a statistically significant effect on training reform engagement (using 2-factor log linear modelling to determine effects) were as follows:

- **SECTOR:** industry sector; that is, manufacturing, library, entertainment (p=0.004)
- **SIZE:** size of enterprise (number of employees) (p=0.006)
- **AUST:** Australian-owned (p<0.0005)
- **MGRPROF:** proportion of workforce who are managerial or professional (p=0.05)
- **CHANGE:** index of change in the workplace (p=0.002)
- **CULTURE:** degree to which organisation has created a learning culture (p=0.02)

In each case except for the industry sector, the size of the worksite and the issue of Australian ownership, the effect was positive; that is, higher levels of the independent variable were associated with higher training reform.

In the case of industry sector, the chemical and oil and manufactured minerals sub-sectors of MLA industries, and the film sub-sector of CREATE industries were associated with a negative effect on training reform engagement. On the other hand, entertainment, libraries and the plastics, rubber and cablemaking sub-sectors were associated with a positive effect. In the case of size of worksite the pattern was mixed and in the case of ownership, Australian-owned enterprises were associated with higher levels of training reform engagement.

Particular combinations of the significant variables were tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were SECTOR/MGRPROF, SECTOR/CHANGE and MGRPROF/CHANGE. Each of these combinations was a significant combination, however when re-run taking interactions between the factors into account, was not.

Reliance on external training

Reliance on external training was tested in 2-factor log linear models with each of the independent variables used to test the other independent variables. The significant independent variables; that is, those factors that had a statistically significant effect on levels of external training (using 2-factor log linear modelling to determine effects) were as follows:

- **SIZE:** size of enterprise (number of employees) ($p=0.001$)
- **FTPERM:** proportion of workforce who are full-time permanent employees ($p=0.03$)
- **CHANGE:** index of change in the workplace ($p<0.0005$)
- **NEWPROD:** new products introduced ($p=0.005$)
- **CULTURE:** degree to which organisation has created a learning culture ($p=0.02$)

In each case except the factor size of worksite, the effect was positive; that is, higher levels of the independent variable were associated with higher levels of external training.

Particular combinations of the significant variables were tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were FTPERM/CHANGE, FTPERM/NEWPROD and CHANGE/NEWPROD. Each of these combinations was a significant combination; however, when re-run taking interactions between the factors into account, FTPERM/CHANGE and CHANGE/NEWPROD were not. The combination of FTPERM and NEWPROD was still significant in the presence of interactions ($p=0.01$).

Formalisation of training

This variable was tested in 2-factor log linear models with each of the previously used independent variables employed again in this analysis. The significant independent variables, that is those factors which had a statistically significant effect on formalisation of training (using 2-factor log linear modelling to determine effects) were as follows:

- **SECTOR:** industry sector, that is, manufacturing, library, entertainment ($p<0.0005$)
- **SIZE:** size of enterprise (number of employees) ($p=0.03$)
- **AUST:** Australian-owned ($p=0.01$)
- **FTPERM:** proportion of workforce who are full-time permanent employees ($p=0.001$)
- **CHANGE:** index of change in the workplace ($p=0.001$)
- **IRCODE:** proportion of workforce covered by awards and agreements ($p=0.05$)
- **ACCRED:** worksite quality accredited and has adopted/is adopting TQM ($p=0.005$)

The effect of workforce permanency and change in the workplace was positive; that is, higher levels of the independent variable were associated with higher levels of formalisation of training.

In the case of the industry sector, the chemical and oil, manufactured mineral products and film industry sectors were associated with a negative effect on formalisation of training, while the entertainment, libraries and plastics, rubber and cablemaking industry sub-sectors were all associated with a positive effect. This is the same pattern as for the training reform engagement variable. It is not hard to accept that training reform engagement and training formalisation should be associated, although attempting to explain the pattern itself is difficult and may be the result of a statistical artifact.

Particular combinations of the significant variables were then tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were SECTOR/FTPERM, CHANGE/NEWPROD, IRCODE/ACCRED

and FTPERM/NEWPROD. Each of these combinations was a significant combination; however, when re-run taking interactions between the factors into account, was not.

Individualisation of training

This variable was tested again with each of the independent variables used with previous dependent variables in 2-factor log linear models. Each variable was tested individually. The factors that had a statistically significant effect on formalisation of training (using 2-factor log linear modelling to determine effects) were as follows:

- **SECTOR:** industry sector; that is, manufacturing, library, entertainment (p=0.013)
- **FTPERM:** proportion of workforce who are full-time permanent employees (p=0.03)
- **CHANGE:** index of change in the workplace (p=0.002)

In the case of permanency of the workforce and workplace change, the effect was positive; that is, higher levels of the independent variable were associated with higher levels of individualisation of training. In the case of industry sector, the same relationships as previously reported for training reform engagement and formalisation of training also held for this variable.

Particular combinations of the three significant variables were tested using 3-factor log linear models. Combinations tested were SECTOR/FTPERM, FTPERM/CHANGE, CHANGE/NEWPROD and SECTOR/NEWPROD. Each of these combinations was a significant combination, however significance was lost when re-run taking interactions between the factors into account.

Support of learning/education

This variable was tested in 2-factor log linear models with each of the independent variables used for analysing the previously discussed dependent variables. The significant independent variables, that is those factors which had a statistically significant effect on formalisation of training (using 2-factor log linear modelling to determine effects) were as follows:

- **SECTOR:** industry sector; that is, manufacturing, library, entertainment (p=0.004)
- **FTPERM:** proportion of workforce who are full-time permanent employees (p=0.03)
- **CHANGE:** index of change in the workplace (p=0.007)
- **NEWPROD:** new products introduced (p=0.02)
- **IRCODE:** proportion of workforce covered by awards and agreements (p=0.02)

In the case of workforce permanency and workplace change, higher levels of the independent variable were associated with higher levels of formalisation of training. In the case of the industry sector, the chemical and oil, manufactured mineral products and film industry sectors were associated with a negative effect on support of learning, while the entertainment, libraries and plastics, rubber and cablemaking industry sub-sectors were all associated with a positive effect.

Particular combinations of the variables found to be significant were further tested using 3-factor log linear models. These models incorporate two independent variables as well as the dependent variable. Combinations tested were SECTOR/CHANGE, FTPERM/NEWPROD, NEWPROD/IRCODE and CHANGE/NEWPROD. Each of these combinations was a significant combination; however, when re-run taking interactions between the factors into account, the significance was lost.

Appendix 5: Survey instrument

Commonwealth Government Statistical Clearing House Approval Number 00500--01

Implementation of learning and training in selected industries Survey questionnaire

BACKGROUND

This survey asks questions about how your organisation currently trains/facilitates learning and the training resources it uses.

The questionnaire will take between **10 and 15 minutes** to complete.

Please bear in mind when answering the questions that unless specifically stated, we are seeking information on the ***current*** activities in your organisation.

All information you provide will be treated as **CONFIDENTIAL**. All data collected will be published only in aggregated form, which would not allow an individual company to be identified. Would you like to receive a copy of the report when it is completed? If so, tick the box below.

Please send me a copy of the report when it is complete ☐

Please return the completed survey by the 14th April 2000 using any of the following means:

Post: Reply Paid 124
Human Capital Alliance
PO Box 2014
NORMANHURST NSW 2076

Fax: 02 9484 9746

Email: hca.admin@humancapitalalliance.com.au
(ring 0294849745 for an electronic copy of the questionnaire to be sent to you. *Please note that confidentiality cannot be guaranteed on emailed responses*)

Section A: Industry and organisation details

A1 **Organisation name:** .....

A2 **Industry sector** (Please Tick):

Rubber		Cement		Film & television	
Cablemaking		Concrete products		Museums	
Plastics		Chemical		Entertainment	
Clay & Ceramics		Oil Refining		Libraries	
Glass making		Hydrocarbons			

A3 **Person Completing Questionnaire**

Which of the following groups best describes your position?

Senior manager or director primarily responsible for personnel (eg Human resources manager / personnel / staff development or training manager)	1
Assistant to above (eg recruitment officer, training co-ordinator, etc.)	2
General Manager / business owner / partner in company	3
Senior manager or director primarily responsible for production (eg Production / process / operations manager	4
Assistant to above (eg shop floor supervisor/foreperson)	5
Financial Controller/accountant	6
Other (please specify) _____	7

SECTION B - Organisation Classification

B1 Is your worksite part of a single site organisation or multi site organisation?

a single site organisation	1	→ go to QB5
a multi-site organisation	2	

B2 Is this worksite the head office of your organisation?

Yes	1
No	2

B3 Is your worksite part of an entirely Australian based organisation or is it a part of a multinational corporation?

an entirely Australian based organisation	1
a multinational corporation	2
don't know	9

B4 Approximately how many employees do you currently have at the worksite?

Less than 20	1
20 – 49	2
50 – 199	3
200 – 499	4
500 +	5

B5 Approximately how many employees does your entire organisation currently have in Australia?

Less than 20	1
20 –49	2
50 – 199	3
200 – 499	4
500 +	5

SECTION C - Organisation characteristics

C1 Of all the staff currently at your worksite, how would they be divided among the following four categories: full-time permanent, part-time permanent, contract and casual.

a. full-time permanent	%
b. part-time permanent	%
c. contract	%
d. casual	%
	100%

C2 What percentage of the current total staff at your worksite would fall into the following categories?

a. management and professional	%
b. technical and trades	%
c. production	%
d. clerical and sales	%
e. labourers/general hands	%
	100%

C3 Thinking about these same categories of staff again, would you say that the range of tasks performed by each has changed in the last 3 years? For each category please estimate if their tasks have changed a lot, changed a little, or not changed at all. *(Please circle one answer only for each staff category)*

Staff categories	A Lot	A Little	Not At All	Don't Know	N/A
a. managerial and professional	1	2	3	9	7
b. technical and trades	1	2	3	9	7
c. production	1	2	3	9	7
d. clerical and sales	1	2	3	9	7
e. labourers/general hands	1	2	3	9	7

C4 Please indicate if any of the changes below have taken place at your worksite in the last 3 years? *(Circle one answer only for each type of change)*

Type of change	Yes	No	Don't Know
a. downsizing i.e. reduction in overall staff numbers	1	2	9
b. reducing number of management layers	1	2	9
c. introducing profit centres	1	2	9
d. decentralisation of decision making	1	2	9
e. introduction of team processes	1	2	9
f. more emphasis on internal staff communications	1	2	9
g. purchase of other business operations	1	2	9
h. diversified into new business areas	1	2	9
i. take-over by another company	1	2	9
j. other major changes *(please specify)*	1	2	9

C5 Which of the following phrases best describes how much the **level of competition** for your products/services has changed in the last three years?

increased a lot	1
increased a little	2
stayed the same	3
decreased	4
don't know	9

C6 Rate the level of competition in the **market** for your products/services on the following factors:

	Very Low	Low	Medium	High	Very High	No competition
a. competition from overseas	1	2	3	4	5	6
b. competition from domestic companies	1	2	3	4	5	6
c. competition on the basis of price	1	2	3	4	5	6
d. competition on the basis of quality	1	2	3	4	5	6

C7 Thinking about the **value** of your organisation's current products/services, what proportion of these would you say are for export markets?

more than 75%	1
51 - 75%	2
26 - 50%	3
1 - 25%	4
none, products/services not exported	5
don't know	9

C8 If in the 1999 calendar year you had a change in **competition** and/or **market** for your products/services, which of the following phrases would you say best describes how it has affected ...

	increased a lot	increased a little	stayed the same	decreased a little	decreased a lot	don't know	Not applicable
a. cost of supplying products/services	1	2	3	4	5	9	99
b. knowledge required by staff	1	2	3	4	5	9	99
c. level of training supplied	1	2	3	4	5	9	99

SECTION D - Impetus Factors

D1 Does your worksite currently have a...

	Yes	No	Don't Know
a. business plan	1	2	9
b. vision statement	1	2	9
c. mission statement	1	2	9

D2 Is this readily available to all employees?

	Yes	No	Don't Know	Not applicable
a. business plan	1	2	9	99
b. vision statement	1	2	9	99
c. mission statement	1	2	9	99

D3 Is there a special section on skills development and training?

	Yes	No	Don't Know	Not applicable
a. business plan	1	2	9	99
b. vision statement	1	2	9	99
c. mission statement	1	2	9	99

D4 Is there a process in place for review and ongoing development of a:

	Yes	No	Don't Know	Not applicable
a. business plan	1	2	9	99
b. vision statement	1	2	9	99
c. mission statement	1	2	9	99

D5 Does your organisation currently have a document that clearly describes the behaviour (values) that they want fostered and encouraged within the organisation? *(These may include such values as trust, teamwork, honesty and integrity in all dealings and may also extend to dealings with customers and suppliers and the community at large).*

yes	1
no	2
don't know	9

D6 Does government regulation or licensing greatly affect the market for the products and services of your organisation?

yes	1
no	2
don't know	9

D7 Is your worksite accredited or is it in the process of being accredited under standards of the international or Australian Standards Organisation (eg. ISO/AS 9000)?

accredited	1
in the process of being accredited	2
none of the above	3
don't know	9

D8 Has your worksite adopted, or is it in the process of adopting, a Total Quality Management or other similar quality management program?

has adopted a quality management program	1
is in the process of adopting a quality management program	2
none of the above	3
don't know	9

D9 Has there been a **major** investment at the worksite in the last three years in areas like new technology or plant, equipment or facilities?

yes	1
no	2
don't know	9

D10 Has your organisation introduced **new products** or **services** in the last three years?

yes	1
no	2
don't know	9

D11 Does your organisation currently have a reward system (other than salary or wages) for staff?

yes	1	
no	2	→ go to QD13
don't know	9	→ go to QD13

D12 Is this reward system .....

	Yes	No	Do Kn
a. financial	1	2	
b. structured	1	2	
c. have an underlying system that is known to all staff	1	2	
d. flexible in the types of rewards used	1	2	
e. other (*please specify*)	1	2	

D13 How are working conditions at your worksite governed? That is, are employees paid according to any of the following? *(you may circle more than one option if appropriate)*

awards	1
registered collective agreements *(eg certified enterprise agreements)*	2
registered individual agreements *(eg Australian Workplace Agreements)*	3
informal individual agreements *(eg appointment letter, verbal agreement)*	4
Something other than above *(please specify)*	5
don't know	9

→ **go to section E**

D14 What proportion of the current workforce at this worksite would have training provisions included in their conditions of employment, however those conditions are governed *(eg award, agreement, etc.)*?

all employees (100%)	1
76% - 99%	2
51 - 75%	3
26 - 50%	4
up to 25%	5
don't know	9

SECTION E – Learning and Training Infrastructure

The following questions are about **formal and informal learning** arrangements you might have for staff employed at your worksite.

E1 Firstly, in the last year have you had any of the following at your worksite?

	Yes	No	Don't Know
a. apprentices (traditional, indentured apprentices)	1	2	9
b. 'new apprentices' (engaged under the 'new apprenticeship' scheme)	1	2	9
c. trainees	1	2	9
d. employees currently undertaking other accredited courses	1	2	9
e. employees in labour market programs such as Jobskills	1	2	9
f. students on workplace programs from schools, TAFE colleges or universities	1	2	9

E2 Does your worksite contribute to course fees or allow time off for paid employees to attend courses at any of the following?

	Yes	No	Don't Know
university	1	2	9
TAFE	1	2	9
adult community education	1	2	9
private colleges	1	2	9

E3 Thinking now about more informal types of learning, were any of the following provided for your worksite staff in the 1999 calendar year?

	Yes	No	Don't Know
a. induction training	1	2	9
b. on the job training	1	2	9
c. mentoring	1	2	9
d. structured job rotation	1	2	9
e. in house staff development courses	1	2	9
f. regular staff/management meetings	1	2	9
g. regular team meetings	1	2	9
h. opportunities to attend other worksites	1	2	9
i. a system for evaluating and learning from unusual events, incidents, problems, etc	1	2	9

which were delivered to your staff by **another organisation**?

	Yes	No	Don't Know
a. training by equipment suppliers	1	2	9
b. training by consultants	1	2	9
c. training by industry associations	1	2	9
d. sending staff to short courses, seminars, conferences, promotional functions	1	2	9

E5 Approximately what proportion of paid employees at your worksite would have been involved in some form of training (ie all forms of training covered by prior questions E2 to E4) at any time during 1999?

none at all? (0%)	1
up to one quarter? (1-25%)	2
up to one half? (26-50%)	3
up to three quarters? (51-75%)	4
most of staff? (76-99%)	5
absolutely everyone? (100%)	5
don't know	9

E6 Again, considering all forms of training, what would you estimate the percentage of your worksite's payroll spent on training in 1999 to be?

none at all	1
less than 1%	2
at least 1% but less than 2%	3
at least 2% but less than 5%	4
at least 5% but less than more than 10%	5
more than 10%	6
don't know	9

your organisation to ensure that everyone at your worksite gets appropriate training? In 1999 did your worksite use any of the following strategies?

	Yes	No	Don't Know
a. a list of training opportunities is circulated and employees nominate the training they want	1	2	9
b. a list of training opportunities is circulated and supervisors or managers nominate the employees who should attend	1	2	9
c. employees identify their own learning needs, and appropriate training, and negotiate this with their supervisor	1	2	9
d. supervisors or managers assess each employee in a fairly informal way concerning what learning is needed, and organise training as the opportunities arise	1	2	9
e. each employee is assessed in a formal and structured way against a list of competencies, and a competency development plan for that employee is prepared	1	2	9

E8 Does your worksite currently have ...

	Yes	No	Don't Know
a. a human resource officer who is responsible for developing a learning environment	1	2	9
b. a training manager	1	2	9
c. a specialist training section	1	2	9
d. worksite trainers/ instructors	1	2	9
e. a written training plan	1	2	9
f. specialist training facilities (eg a training room)	1	2	9
g. line managers who are expected to create a learning environment as part of their role	1	2	9

E9 Does your work site do the following:

	Yes	No	Don't Know
a. formally evaluate any training delivered	1	2	9
b. conduct systematic training/competency development needs analysis	1	2	9
c. have a training/learning committee	1	2	9
d. develop learning resources/training manuals	1	2	9
e. formally evaluate all learning which occurs	1	2	9

standards or enterprise standards?

	Yes	No	Don't Know
a. National competency standards	1	2	9
b. Enterprise standards	1	2	9

E11 Is your organisation a registered training provider? That is 'registered' with a State Training Authority (like OTFE in Victoria or DET in NSW).

yes	1
no	2
don't know	9

E12 Please indicate which of the following factors is important in driving learning and competency development at your worksite. Would you say it is very important, somewhat important or not important?

Factors driving training		Not important	somewhat important	Very important	Don't know
a.	concern for quality	1	2	3	9
b.	new or changed technology	1	2	3	9
c.	a change in work organisation including way in which jobs are defined	1	2	3	9
d.	government licensing and regulation, including occupational health and safety regulation	1	2	3	9
e.	deregulation of markets	1	2	3	9
f.	industrial relations developments	1	2	3	9
g.	other factor *(please specify)*	1	2	3	9

concern for quality	1
new or changed technology	2
a change in work organisation including ways in which jobs are defined	3
government licensing and deregulation, including occupational health and safety regulations	4
deregulation of markets	5
industrial relations developments	6
Other factors *(please specify)*	7
don't know	9

E14 Please indicate the level of agreement you have with the following statements by circling the appropriate number in each row. The level of agreement may vary between strongly agreeing to strongly disagreeing.

		strongly agree	agree	neutral	disagree	strongly disagree
a.	When a problem occurs a hypothesis is put forward to be criticised and debated before action is taken to solve the problem	1	2	3	4	5
b.	Problems are discussed and thought about before actions are taken	1	2	3	4	5
c.	When problems occur action is taken to solve the problem	1	2	3	4	5
d.	Managers and staff work together towards solutions	1	2	3	4	5
e.	Employees take responsibility for their own learning	1	2	3	4	5
f.	Mistakes are seen as learning opportunities	1	2	3	4	5
g.	At management level the organisation has a positive attitude towards "risk-taking" *(i.e. outcomes that are not fully predictable)*	1	2	3	4	5
h.	At staff level the organisation has a positive attitude towards "risk-taking" *(i.e. outcomes that are not fully predictable)*	1	2	3	4	5
i.	Problems and their solutions are used as both individual and corporate learning opportunities	1	2	3	4	5

All main questions have now been completed.

If there are any of your responses we need to clarify, who can we contact?

Contact Name: .....

Contact position: .....

.....

Contact phone number or email address: .....

.....

Please provide an estimate of the time taken to complete this form

Include

- The time actually spent reading the instructions, working on the question and obtaining the information
- The time spent by all employees in collecting and providing this information

_____ minutes

Thank you for your assistance in completing this survey!

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